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GRENADES, HAND AND RIFLE

DEPARTMENTS OF THE ARMY AND THE NAVY

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GRENADES, HAND AND RIFLE

*** This manual supersedes TB ORD 637, 8 May 1956; TB 3-300-4, 18 April 1959; TB 3-300-5, 28 April 1959; TB CML 58, 23 September 1960; TB CML 86, 31 October 1961; TB 9-1330-200/1, 10 November 1959; TB 9-1330-200/2, 7 March 1960; TB 9-1330-200/3, 18 July 1960; TB 9-1330-200/4, 5 April 1966; and so much of TM 3-300, 14 August 1956 as pertains to grenades.**

CHAPTER 1

INTRODUCTION

Section I. SCOPE

1–1. General

This manual is intended for instruction, and the dissemination of general and technical information concerning hand and rifle grenades. It covers general characteristics, specific data, means of identification, precautions in handling and use, and general information on packing. General technical information pertaining to all types and kinds of conventional ammunition and explosives is contained in TM 9–1900. General information on care, handling, preservation storing and shipping of ammunition and explosives and their destruction is contained in TM 9–1300–206. Information on tactical use and training of troops in the use of grenades will be found in FM 23–30. These referenced publications should be made readily available as required for users of this manual.

1–2. Arrangement of Text

a. Chapter 1 outlines the scope of the manual and gives a general discussion of classification, identification, care, handling and preservation, packing and marking for shipment, required forms and reports and a general description of the functioning and use of grenades.

b. Chapter 2 gives description, information and technical instructions on service and practice hand grenades and components.

c. Chapter 3 gives description, information and technical instructions on service and practice rifle grenades and components.

d. Chapter 4 gives description and information on items from other federal supply classes which are used in lieu of, or in conjunction with, grenades.

e. Chapter 5 gives information on the destruction of grenades to prevent enemy use.

f. Appendix I provides a list of references.

g. Appendix II gives an index of former item names.

h. Appendix III gives a complete round table on hand and rifle grenades.

1–3. Errors, Omissions, and Recommended Changes

This first edition manual is published in advance of complete technical review. Direct reporting of errors, omissions, and recommendations for improving this manual is authorized and encouraged. DA Form 2415 (Ammunition Condition Report) will be completed and forwarded direct to: Commanding Officer, Picatinny Arsenal, ATTN: SMUPA–TR, Dover, New Jersey 07801. Refer to TM 38–750 for reporting procedures.

Section II. GENERAL

1–4. Classification

a. General. Grenades are classified according to method of projection as hand or rifle; according to use as service, practice, or training; and according to filler as explosive chemical, illuminating inert or with a spotting charge filler.

b. Method of Projection. The basic classification of grenades is according to method of projection. Certain grenades are designed to be thrown by hand and others are designed to be projected from a rifle by means of grenade launcher and a special grenade launching cartridge. Figure 1–1 shows examples of both hand and rifle grenades. Certain hand grenades are projected from rifles by means of grenade projection adapters and special blank grenade cartridges (para 3-12 and 3-13).

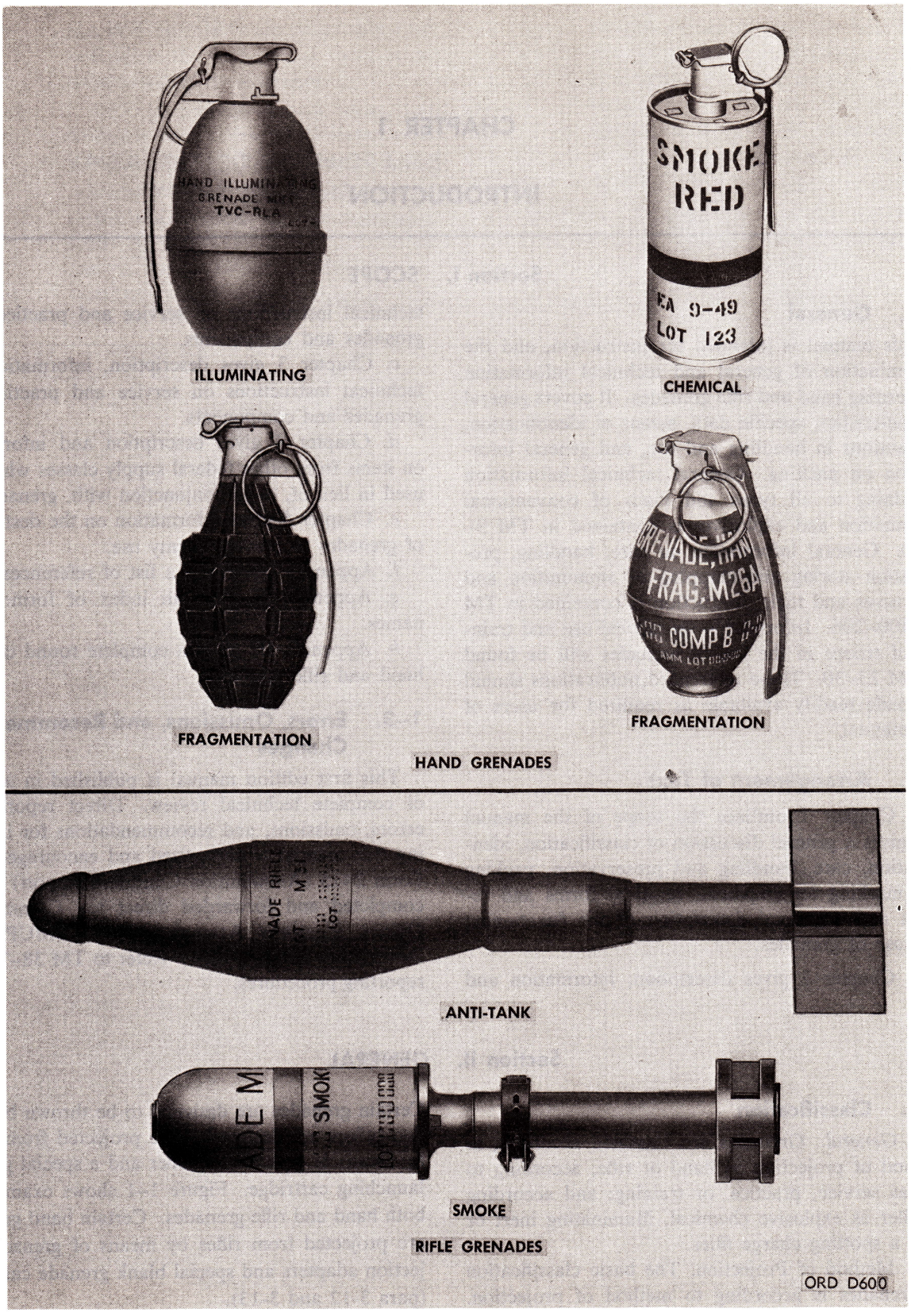


Figure 1–1. Representative types of grenades.

c. Use. Each type of grenade is also classified according to method of use as either service, practice, or training. Service grenades are intended for use in tactical situations and may be loaded with an explosive chemical or illuminant charge. Practice grenades are intended for use in providing realistic training for troops in the proper care, handling and use of grenades. Training grenades are used for training troops in handling throwing and arming grenades.

d. Filler. Service grenades are also classified according to their filler, as explosive chemical or illuminating. Explosive grenades contain a high explosive charge for the purpose of inflicting casualties by fragmentation of a case, by blast effect or by penetration of armor plate. Chemical-filled grenades include chemical agent (gas), smoke and incendiary filled grenades. Illuminating grenades contain an illuminant composition. Practice grenades contain a small spotting charge, training grenades are completely inert.

1–5. Identification

a. General. Grenades, in common with other types of ammunition, are identified by standard nomenclature and the lot number of the item. This identification is marked on all containers and on the item itself unless it is too small, or the shape too irregular.

b. Standard Nomenclature. Standard nomenclature is established in order that each item supplied may be specifically identified by name. Standard nomenclature consists of the item name, a colon, model number, and additional item identification established in accordance with Federal item identification guides. The use of standard nomenclature is mandatory for all purposes of record.

c. Ammunition Lot Number. When ammunition is manufactured an ammunition lot number becomes an essential part of the marking, and is assigned in accordance with pertinent specifications. The lot number consists, in general, of the loader's initials or symbol, the assigned interfix number, and the serial number of the lot. The parts of the lot number are separated by a dash. This lot number is stamped and marked on every item and on all packing containers. It is required for all purposes of record, including reports and conditions, functioning, or accidents in which the ammunition may be involved. In any one lot of ammunition, similar components used in assemblies are manufactured under as nearly identical conditions as practicable.

d. Model. To identify a particular design, a model designation is assigned at the time the model is classified as an adopted type. This model designation becomes an essential part of the nomenclature and is included in the marking of the item. The present system of model designation consists of the letter M followed by an Arabic numeral, for example, MI. Modifications are indicated by adding the letter A and the appropriate Arabic number. Thus, MIAI indicates the first modification of an item for which the original model designation was MI. Whenever a B suffix appears in a model designation it indicates an item of alternative or substitute design material or manufacture. Certain items standardized for use by both Army and Navy are designated by an AN preceeding the model number. Development items are indicated by the letter XM (or T for older items) plus an Arabic number and modification by the addition of E and an Arabic number. Model designations of items of Navy design consist of Mk signifying the word Mark followed by an Arabic numeral, together with the modification (Mod) number, for example, Mk6 mod 2.

e. Painting and Marking.

(1) *Painting.* Grenades are painted primarily to prevent rust. Secondary purpose is to provide, by color, a ready means of identification as to type. Lusterless paint is used to meet requirements for camouflage. The color schemes used on hand and rifle grenades are indicated in table 1–1.

Table 1–1. Color Coding of Grenades

	Grenades—color coded prior to implementation of MIL-STD 709		*Grenades—color coded in accordance with MIL-STD 709*	
Type of grenade	*Color of body*	*Color of marking*	*Color of body*	*Color of marking*
HAND GRENADES				
Fragmentation	Olive drab	Yellow	Olive drab	Yellow
Illuminating	Unpainted	Black	All white or unpainted with white band	Black
Practice	Blue	None or white	Blue with brown band	None or white
Training	Black[1,2]	None	Blue[2]	None
RIFLE GRENADES				
High explosive, antitank	Olive drab	Yellow	Black	Yellow
WP smoke	Gray with yellow band and olive drab stabilizer assembly	Yellow	Light green with olive drab stabilizer assembly	Light red and 1 yellow band
Colored smoke	Gray with yellow band and olive drab stabilizer assembly	Yellow	Light green	Black (Early production marked in white)[3]
Practice	Black[2]	White	Blue	White
CHEMICAL HAND/RIFLE GRENADES				
Nonpersistent casualty gas	Gray	Green and green band[1]	Gray	Green and green band[1]
Persistent casualty gas	Gray	Green and green bands[2]	Gray	Green and green bands[2]
Harassing (special purpose agents)	Gray	Red and red band[1]	Gray	Red and red band[1]
WP (smoke)	Gray	Yellow and yellow band[1]	Light green	Light red and 1 yellow band
Smoke (M18)[4]	Gray	Yellow and yellow band[1]	Light green	Black (Early production marked in white)
Incendiary	Gray	Purple and purple band[1]	Light red	Black
Practice	Blue	White	Blue	White, yellow or brown band
Inert	Black	White (bronze or brass assemblies are unpainted)	Blue	White
Offensive	Black	Yellow	Black	Yellow

[1] May have longitudinal white stripes painted 90 degrees apart around body.
[2] This item is completely inert.
[3] "CCC," in the color of smoke produced, is marked on the ogive.
[4] In addition to the standard color marking, the top of each M18 grenade is painted the color of the smoke produced by the grenade.

(2) *Marking.* The ammunition described herein is marked in such a way as to provide positive identification for all purposes. A most important part of the marking is the ammunition lot number which appears on data cards in all packing containers and, when practicable, on the item itself. One type of fragmentation grenade, which has a grooved body that cannot readily be marked, is completely identified by markings on its fiber container.

f. Ammunition Data Card. The ammunition data card is a 5- by 8-inch card which is prepared for each lot of accepted ammunition and is furnished with the shipping ticket with each shipment of ammunition. This card contains data concerning the item and its components. Information on the data card includes a lot number, date packed, identity of components, assembling and firing instructions, Federal stock number, and other data as required. It is the basic document in the surveillance and use of the item to which it pertains.

g. Federal Stock Number and Department of Defense Ammunition Identification Code. The Federal stock number (FSN) (for example, 1330–028–5841) has replaced the Ammunition Identification Code (AIC) symbol and the Ordnance stock number formerly used. There is a different FSN for each item of supply. The first four digits in an FSN are always the class in which the item belongs. Grenades are included in the class number 1330. The next seven digits in an FSN are called the Federal item identification number (FIIN). There is a different FIIN for each item in a supply manual. Thus the Federal stock number is composed of the class (first four digits) and the FIIN (next seven digits). In connection with the FSN, a Department of Defense Identification Code (DODIC) for interchangeability of ammunition and explosive supply has been established. This code, which is composed of four characters consisting of a letter and three digits (for example, G915), is the same for items which are completely interchangeable as to function and use. Hence, whenever the same second part of the code is used as a suffix to two or more Federal stock numbers, the items are interchangeable for issue.

1–6. Care, Handling, and Preservation

a. General Precautions.

(1) Due consideration should be given to the observance of general precautions in use of ammunition. These additional precautions will be found in TM 9–1900, TM 9–1300–206, TM 3–300, FM 23–30, and AR 385–63.

(2) Grenades must be handled with care at all times. Fuzes, which are installed in the grenades as shipped, are prone to damage by mishandling and may become hazardous.

(3) Personnel should be trained to handle all grenades and components as potentially dangerous even if the items have been designated inert. The same basic safety rules should be followed when using inert, training, or lecture aids as prevail when the fully loaded items are being used. Striking, dropping, or handling in other than the manner prescribed for explosive loaded (live) items should not be permitted. Personnel should be cautioned to treat all inert loaded grenades and components as requiring the same degree of caution as their explosive or chemical loaded live counterparts. In order to make inert (display) items readily identifiable, several holes are drilled or cut in them where practicable. In addition, they are stamped and shil or stencilled EMPTY if they have no filling and INERT if they have an inert filling. (For further information, see AR 385–65.)

(4) In order to keep grenades and components in a serviceable condition and ready for immediate issue and use, due consideration must be given to the general rules in (5) through (8) below.

(5) Store grenades and fuzes in the original containers in a dry, well-ventilated place protected from the direct rays of the sun and other sources of excessive heat.

(6) Keep all grenades and containers clean, dry and protected from possible damage.

(7) Disassembly of explosive components without specific authorization is strictly prohibited.

(8) Do not open fuze containers or remove protective safety devices until just before use.

(9) Return all grenades prepared for firing but not fired to their original packing and mark them appropriately.

(10) Observe all precautions listed throughout this manual. For more detailed information on care, handling and preservation, and safety distance requirements for storage and preparation of grenades, refer to TM 9–1300–206.

b. Precautions in Handling. Grenades must not be lifted or handled by the pull ring that is attached to the safety pin of the fuze. The safety pin will be removed just before throwing or just before launching and *at no other time.*

c. Precautions in Firing.

(1) The safety pin will not be pulled until just before throwing or launching the grenade.

(2) During the safety pin removal, the safety lever must be held firmly in place (as prescribed in FM 23–30) until the grenade is thrown, tossed or placed in position.

(3) Silent type fuzes (identified by a T-lug which protrudes from the top of the fuze to a slot in the safety lever) may be used in some grenades. Under no conditions, therefore, will the thrower consider the grenade a dud because no noise, smoke, or sparks are observed upon release of the safety lever.

(4) Occasionally burning type grenades will flash; hence, when used in maneuvers they will be so thrown as to function not less than 10 meters from personnel.

(5) Because white phosphorous (WP) particles cause burns and fires, WP grenades used in training will be projected so that they will burst at a distance of over 35 meters from all personnel, unless protection is afforded.

(6) Personnel should take cover after throwing or projecting a WP grenade which contains a bursting charge.

***Caution:* Particles of WP may not burn when released into a moist area, but will ignite when drier conditions occur. WP can be expected to start fires several days after a maneuver or training exercise.**

(7) If the safety lever on a WP grenade is released accidentally, the grenade should be thrown and personnel should take cover, or if the grenade has been dropped with the safety pin removed, personnel should take cover immediately.

(8) Information concerning first aid measures in the treatment of white phosphorous burns will be found in TM 3–300 and TM 8–285.

(9) Since fragments may be projected over 200 meters, fragmentation grenades will not be used in training without adequate cover (see FM 23–30).

(10) Rifle grenades with cracked or distorted stabilizer assemblies will not be used.

(11) The appropriate rifle grenade and prescribed combination of launcher and cartridge must be used. Hand grenades must be attached to an adapter and prescribed combination of launcher and grenade cartridge must be used to launch hand grenades from a rifle.

(12) Rifle grenades or adapted hand grenades must never be launched with any cartridge other than the special grenade launching cartridges provided for that purpose. Do not use a bulleted cartridge to project a grenade or a ground signal from a launcher under any circumstances. Injury to personnel and damage of the rifle are possible.

(13) Detailed information concerning safety precautions to be observed in firing grenades will be found in AR 385–63, TM 3–300 and FM 23–30. Do not recover or tamper with live grenades that have failed to explode (duds). Duds will be disposed of in accordance with the provision of TM 9–1300–206.

1–7. Packing and Marking for Shipment

a. Grenades are packaged and marked in accordance with pertinent specifications and drawings. Both inner packages and outer packages are designed to withstand all conditions ordinarily encountered in handling, storage and transportation, and to comply with Interstate Commerce Commission regulations.

Figure 1–2. Typical packing boxes for grenades.

Due consideration is given to packaging to prevent the entrance of moisture. Packing and marking data are given in Department of the Army SC 1305/30-IL and SC 1340/98-IL. Typical packing and markings are illustrated in figure 1–2.

b. Marking includes all information required:

(1) For complete identification of contents.

(2) By the Interstate Commerce Commission for shipping, including addresses of consigner and consignee and shipping designation of the contract.

(3) For intelligent handling, storage, and use.

c. For general information on packing and marking, refer to TM 9–1900.

d. For shipment, grenades are marked in accordance with Interstate Commerce Commission regulations as required for specific items. See Department of the Army SC 1305/30-IL and SC 1340/98-IL.

1–8. Transportation

Transportation of explosives by rail or truck in the United States is regulated by "Interstate Commerce Commission Regulations for Transportation of Explosives and Other Dangerous Articles by Freight" published by the Bureau of Explosives, 30 Vesey Street, New York, New York 10007. For additional information on transportation, see TM 9–1300–206.

1–9. Field Storage

In oversea commands and combat areas the provisions of TM 9–1300–206 and FM 9–5 should be observed.

1–10. Reports and Forms

a. Accidents. Responsibilities and procedures for preparation of reports of accidents and recording and reporting requirements for Army accidents are contained in AR 385–40.

b. Field Report of Accidents. If an accident or malfunction involving the use of ammunition occurs in training or combat, the occurrence will be reported immediately to the technical service representative under whose supervision the ammunition for the unit involved is maintained or issued. A report will be made by the officer in charge, or by the senior noncommissioned officer or enlisted man of the unit involved. All available pertinent facts will be included in the report. It is the duty of a qualified individual to investigate and report all such incidents in accordance with AR 700–1300–8.

c. Fires. A fire report will be reported in all cases of fire or explosion followed by fire that result in loss of life, or damage (if estimated at $100.00 or more) to Army equipment, materials, structures, plants, systems, timber or grasslands or other property (except motor vehicles or aircraft damaged while in use) at all Department of the Army installations. For further information see AR 385–12. Reports of fires or explosions followed by fire involving ammunition or other explosives are in addition to reports specified in AR 385–40.

d. Report of Hazardous Conditions Involving Military Explosives or Ammunition. Reports will be submitted on all investigations concerning hazards, accidents (*b* above), and safety of military explosives and ammunition, in accordance with AR 385–60.

e. Forms. The forms generally applicable to the information contained in this manual are listed in appendix I. For information on use of certain forms pertaining to ammunition records and procedures, refer to TM 38–750. The forms prescribed for use throughout Department of the Army are listed in DA Pam 310–2. Requisitions for these forms will be submitted in accordance with AR 310–1.

Section III. DESCRIPTION

1–11. General

a. Description. Grenades are projectiles of a size and shape convenient for throwing by hand or projecting from a rifle. The hand grenade is thrown by hand in a prescribed manner and the rifle grenade is projected by a special grenade launching cartridge from a rifle equipped with a grenade launcher. The various types of hand grenades are used to supplement small arms for effect against an enemy in close combat for producing a harrasing agent, for smoke screening and signaling, and for incendiary purposes. The various types of rifle grenades are for use against armored targets and for screening and signaling smokes.

b. Explosive Train. The term explosive train refers to the initiating and explosive elements of a complete round. The components of an explosive train are arranged according to their sensitivity from the very sensitive initiating charge to the relatively insensitive main charge. A typical high-explosive grenade explosive train is illustrated in figure 2–5 (cross section), and consists of the following essential components: the primer, the delay element, the detonator (and booster), and the filler. The complete round functions as described in (1) through (5) below.

(1) The primer fires emitting an intense spit of flame.
(2) The flame from the primer ignites the delay element.
(3) The delay element burns for the prescribed time delay.
(4) The delay element sets off the detonator. In a low explosive grenade explosive train, an igniter is used instead of the detonator.
(5) The detonator detonates the booster (when present) and the explosive charge. In a low explosive grenade (or irritant agent grenade) the igniter functions the spotting charge or agent filler.

1–12. Hand Grenade

a. General. Hand grenade, as the name implies, is intended primarily to be thrown by the individual soldier. All standard Army hand grenades have a delay-type fuze. The grenade will not function by impact action but only after the burning of the delay element in the fuze assembly has occurred. All HE practice, and WP (smoke) grenades have a 4- to 5-second delay. Irritant agent type, riot control grenades and incendiary grenades have a 1.2 to 2-second delay time.

b. Type. There are only four general types of hand grenades described in detail in this manual: Fragmentation, illuminating, chemical, and practice and training hand grenades. A fifth type, an offensive hand grenade, is now obsolete and no longer authorized for use. The offensive hand grenade was simply a cylindrical container filled with approximately 8 ounces of TNT. It was shipped without a fuze and was used principally for blast effect. Although offensive hand grenades are now obsolete, fuzes for these hand grenades are still available for issue and use when authorized. When a blast effect hand grenade is desired, a ¼ pound or ½ pound demolition charge fitted with an offensive hand grenade fuze or a delay detonator may be used (para. 4-2).

(1) *Fragmentation hand grenades.* Fragmentation hand grenades are used to produce casualties by the high velocity projection of fragments of the grenade case. Fragmentation hand grenades have an effective casualty radius up to 15 meters.
(2) *Illuminating hand grenades.* Illuminating hand grenades are used to illuminate terrain in night operations. They provide 55,000 candlepower for a period of 25 seconds.
(3) *Chemical hand grenades.* Chemical hand grenades are used for incendiary, screening, signaling, training, or riot control purposes.
(4) *Practice and training hand grenades.* Practice and training hand grenades are designed for training personnel in care, handling and use of service rifle grenades.

1–13. Rifle Grenades

a. General. Rifle grenades are especially designed for projection from a grenade launcher attached to the muzzle of the rifle. Hand grenades may also be adapted for projection from a rifle by means of a projection adapter (paras. 3–12 and 3-13 and figs. 3-7 and 3-8). A special grenade cartridge is used in the rifle to project the grenade. Grenade sights help obtain first round hits on the target. Rifle grenades may be used against armored targets, against personnel, for screening or signaling, or for incendiary effect against flammable targets. Rifle grenades may be fired at low angles (direct fire) (used against tanks) or high angles (indirect fire), depending on the type of grenade being fired and effect desired.

b. Types. Three general types of rifle grenades are described in this manual: high-explosive antitank, practice, and chemical.

(1) *High-explosive antitank rifle grenades.* Antitank rifle grenades, as the name implies, are intended for use against armored targets. An antitank rifle grenade is essentially a small shaped charge capable of penetrating 10 inches of armor plate or 20

inches of reinforced concrete at an effective range of 115 meters.

(2) *Practice rifle grenades.* Practice rifle grenades are designed for training personnel in care, handling and use of service rifle grenades.

(3) *Chemical rifle grenades.* Chemical rifle grenades are used primarily for the production of smoke, either for screening or signaling purposes. In addition, the white phosphorous grenade can also be used for incendiary effect against flammable targets. Chemical grenades function either on impact with the targets to produce clouds of smoke or upon projection to produce a long trail of smoke through the air.

1–14. Related Items

The grenades and components described in chapters 2 and 3 all belong to Federal supply class 1330. Other items used in conjunction with, or in lieu, of grenades are covered in other publications. These items include demolition charges, firecrackers, hand grenades, simulators, ammunition pouches, rifle grenade launchers and rifle grenade sights. These items are described briefly in chapter 4.

CHAPTER 2

HAND GRENADES

Section I. INTRODUCTION

2–1. General

Hand grenades (fig. 1–1) are small high-explosive (HE) or chemical filled missiles designed to be hand thrown by the individual soldier. The maximum range that the average trained soldier can throw a grenade is 40 meters. The range of a hand grenade may be increased to approximately 160 meters by projecting it from a rifle by means of a projection adapter (paras. 3–11, 3–12, and 3–13). There are five basic types of hand grenades—fragmentation, offensive, illuminating, chemical, and practice and training. Hand grenades may be used against a variety of targets at close range for producing casualty or for blast effect. They may also be used for signaling, illuminating and screening (smoke). For detailed information on tactical use of hand grenades, see FM 23–30.

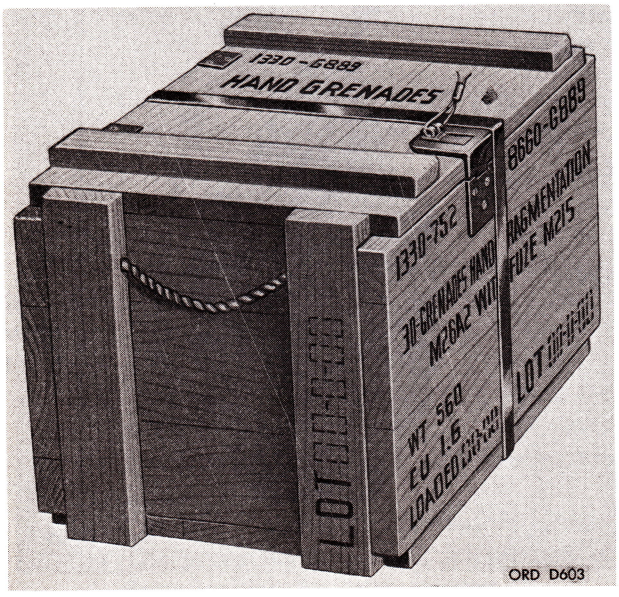


Figure 2–1. Typical outer packing for hand grenades.

2–2. Data

A complete list of currently available hand grenades and components is given in Department of the Army SC 1305/30-IL and SC 1340/98-IL. Figures 2–1 and 2–2 show typical outer and inner packings, respectively, for hand grenades. Detailed technical information on the various hand grenades and components available is given in paragraphs 2–3 through 2–22.

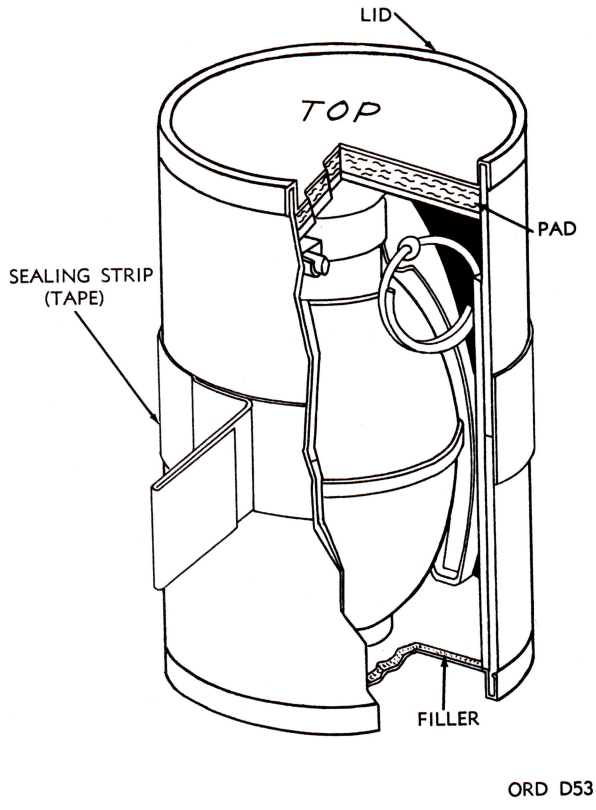


Figure 2–2. Typical inner fiber container for hand grenades.

Section II. FRAGMENTATION HAND GRENADES

2–3. General

a. High explosive hand grenades may be employed for two different types of effect: fragmentation effect and blast effect. Fragmentation hand grenades are used primarily for fragmentation effect, however, the blast effect of fragmentation hand grenades may be used effectively in small enclosed places. The fragmentation effect of a grenade is most effective against a scattered deployment of personnel because the effective range of high speed missiles (fragments of the grenade body projected by the explosion) is much greater than the effective radius of the blast effect. For example, the effective casualty radius (because of fragmentation effect) of the fragmentation hand grenade M26A2 is 15 meters whereas the effective casualty radius (because of blast effect) of a ½ pound TNT demolition charge (para. 4–2) is only 2 meters. Blast effect is most effective in inclosed spaces. When the primary effect desired is blast effect, a TNT demolition charge (para. 4–2) is preferable because none of the explosive force is expended in expanding and rupturing a fragmentation case. The average soldier can throw a fragmentation hand grenade from 30 to 40 meters. By means of a grenade projection adapter, a fragmentation hand grenade may be projected from a rifle (paras 3–11 and 3–12) thus increasing its maximum range to approximately 160 meters. There are two basic types of fragmentation hand grenades: the older fragmentation hand grenade Mk2 (fig. 2–3) (para. 2–4) and the newer improved fragmentation hand grenade M26 series (fig. 2–4) (para. 2–5). These two types are functionally the same but the M26 has much greater casualty-producing power in the area of burst and is less hazardous from the standpoint of stray fragments at extended distances.

b. Precautions.

(1) If a grenade is dropped after the safety pin has been removed, pick it up and throw it. A hand grenade can be picked up and thrown much faster than a soldier can run in 4 to 5 seconds.

(2) Do not attempt to disassemble a fragmentation hand grenade.

(3) Follow all precautions listed in paragraph 1–6 as well as those listed in paragraphs 2–4 and 2–5. For additional precautions in tactical use of fragmentation hand gre-

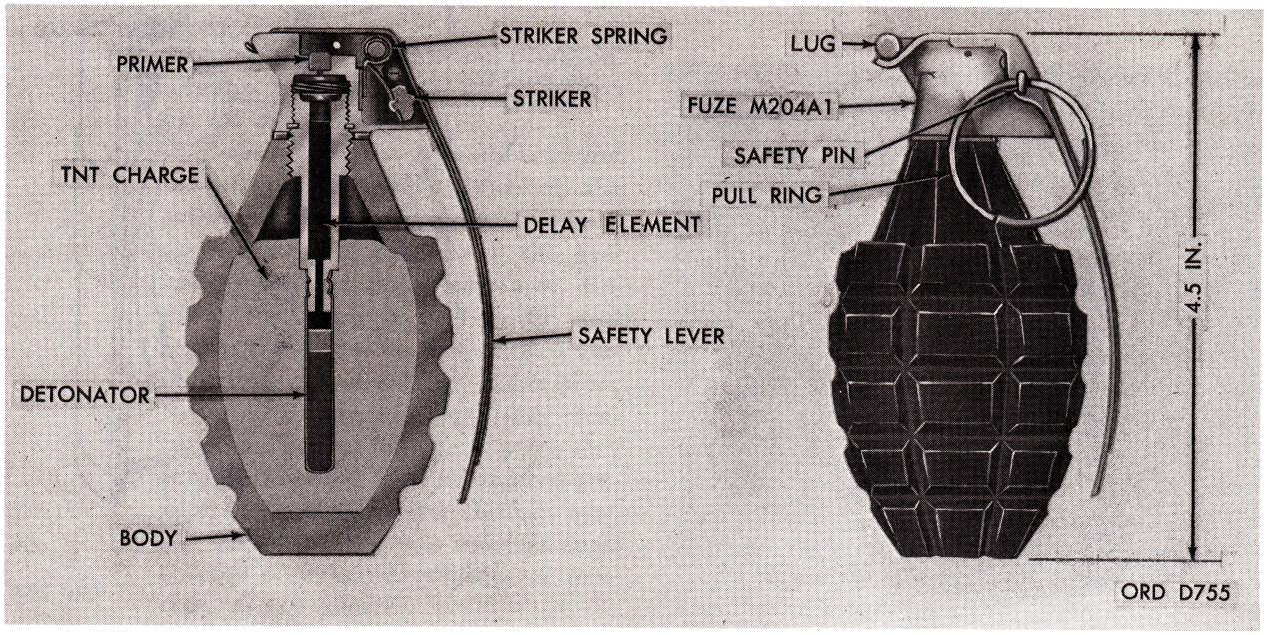


Figure 2–3. Grenade, hand: fragmentation, Mk2, w/fuze M204A1

nades refer to FM 23–30, TM 9–1300–206, and AR 385–63.

2–4. Grenade, Hand: Fragmentation, Mk2

a. General. Fragmentation hand grenade Mk2 (fig. 2–3) is an older type grenade. It is the grenade from which the term "pineapple" was derived because of its deeply serrated body. These deep serrations delineate the fragmentation of the body when the grenade explodes. The grenade Mk2 is no longer being manufactured. As present stocks are depleted, the Mk2 is being replaced by the improved design of the grenades M26-series (para. 2–5).

b. Description.

(1) *General.* The grenade Mk2 consists essentially of three basic parts: an explosive charge, a body, and a fuze. This grenade is issued with fuze M6A4C, M204A1, or M204A2. The three fuzes function the same. They differ in such physical details as shape of body, shape of lever, and loading. The M6A4C is a noisy, spark-and-smoke-producing fuze. The fuzes M204A1 and M204A2 (improved versions of the earlier fuze M2043 are noiseless, sparkless, smokeless types.

(2) *Data.*

Model number	Mk2
Type	fragmentation
Weight	21 ounces
Explosive charge	2 ounces of flaked TNT
Dimensions	Length, 4.5–inches; diameter, 2.25–inches
Body	Cast iron
Fuze: model number	M6A4C, M204A1, or M204A2
Type	delay detonating
Delay time	4 to 5–seconds
Color	See table 1–5–1

c. Functioning. As issued, the hand grenade fuze is cocked and ready to fire. After the safety pin is withdrawn and the grenade thrown (*e* below), it functions as follows:

(1) The striker, driven by its spring, forces the safety lever out of its path; the safety lever flies free of the grenade and releases the striker.

(2) The striker strikes the percussion primer.

(3) The primer emits a small intense spit of flame igniting the delay element.

(4) The delay element burns for 4 to 5 seconds and sets off detonator.

(5) The detonator explodes and detonates the explosive charge.

(6) The explosive charge explodes rupturing the body and projecting fragments, some of which may be dangerous as far as 185 meters.

d. Preparation for Use.

(1) Remove fiber container from packing case.

(2) Carefully remove cover of fiber container and inspect grenade *before* removing. The grenade, as issued, is packed in the fiber container with its fuze up.

(3) Inspect to see that safety pin is in place and undamaged and that the legs of the safety pin are spread apart (approximately 30°).

Warning: **If the grenade is packed upside down or the safety pin is not properly in place, do not attempt to remove the grenade from its fiber container. Replace the cover and return the container to the responsible ammunition supply personnel.**

(4) Remove grenade from fiber container and inspect for obvious defects which would affect functioning. Inspect for cracked grenade, broken safety lever, broken lugs, and damaged safety pins and pull rings. Dispose of defective grenades as in (3) above.

e. To Fire.

(1) Grasp grenade in hand, holding safety lever against the grenade body with thumb.

(2) With other hand pull safety pin pull-ring with a twisting-pulling motion holding safety lever tightly against the grenade body.

Note. A pull of 10 to 30 pounds should remove safety pin.

(3) Throw grenade and take cover immediately.

(4) Observe precautions listed in paragraphs 1–6 and 2–3.

f. Disarming. Once the safety pin has been removed the grenade is armed and must be thrown. Do not attempt to replace the pin in order to return it to a safe condition.

g. Capabilities. The average soldier can throw the fragmentation grenade Mk2 approximately 30

meters. The effective casualty radius is 10 meters. Fragments may be projected as far as 185 meters.

2–5. Grenade, Hand: Fragmentation, M26–Series

a. M26-Series Grenades (Except M26A2 w/Fuze M217).

(1) *General.* Hand grenades, M26-series (fig. 2–4), were developed as replacements for fragmentation hand grenade Mk2 (para. 2–4). Hand grenades, M26-series, have a larger explosive charge and a more effective casualty radius, are lighter than the older grenades Mk2 and produce more fragments than Mk2 grenades. Fragments, though smaller than those produced by Mk2 grenades, have a higher initial velocity.

(2) *Description.*

(*a*) *General.* The grenade, M26-series, consists of three basic parts: an explosive charge, a body, and a fuze. The body consists of a smooth thin sheet steel shell. The inside of the shell is lined with a notched fragmentation wire coil. Three models of the grenades M26-series are available: M26, M26A1, and the M26A2. The M26 is issued with fuze M204A1 or M204A2; the M26A1 with fuze M204A2; and the M26A2 is issued with fuze M215 (fig. 2–5). These fuzes, functionally similar, differ only in such physical details as shape of body, shape of safety lever, loading, and diameter of fuze threads.

Note. The fuzes M204-series and M215-series can not be used interchangably.

(*b*) *Data.*

Model number ..... M26, M26A1 or M26A2
Type ..... Fragmentation
Weight ..... 16 ounces
Explosive charge ..... 5.5-ounces of Comp. B
Dimensions ..... Length, 3.9–inches; diameter, 2.25–inches
Body ..... Thin sheet steel lined with notched fragmentation coil
Fuze: model number ..... M204A1 or M204A2 with grenade M26; M204A2 with grenade M26A1; M215 with grenade M26A2
Type ..... delay detonating
Delay time ..... 4 to 5 seconds
Color ..... See table I–1

(3) *Functioning.* Similar to Mk2 functioning (para. 2–4*c*).

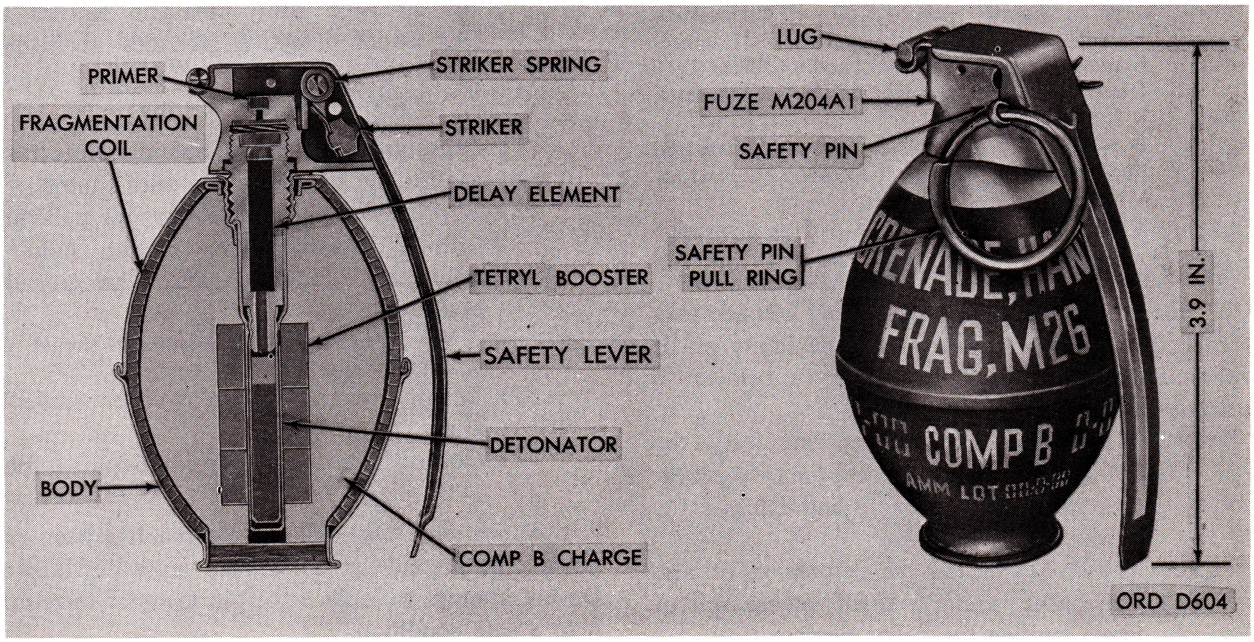


Figure 2–4. Grenade, hand: fragmentation, M26, w/fuze M204A.

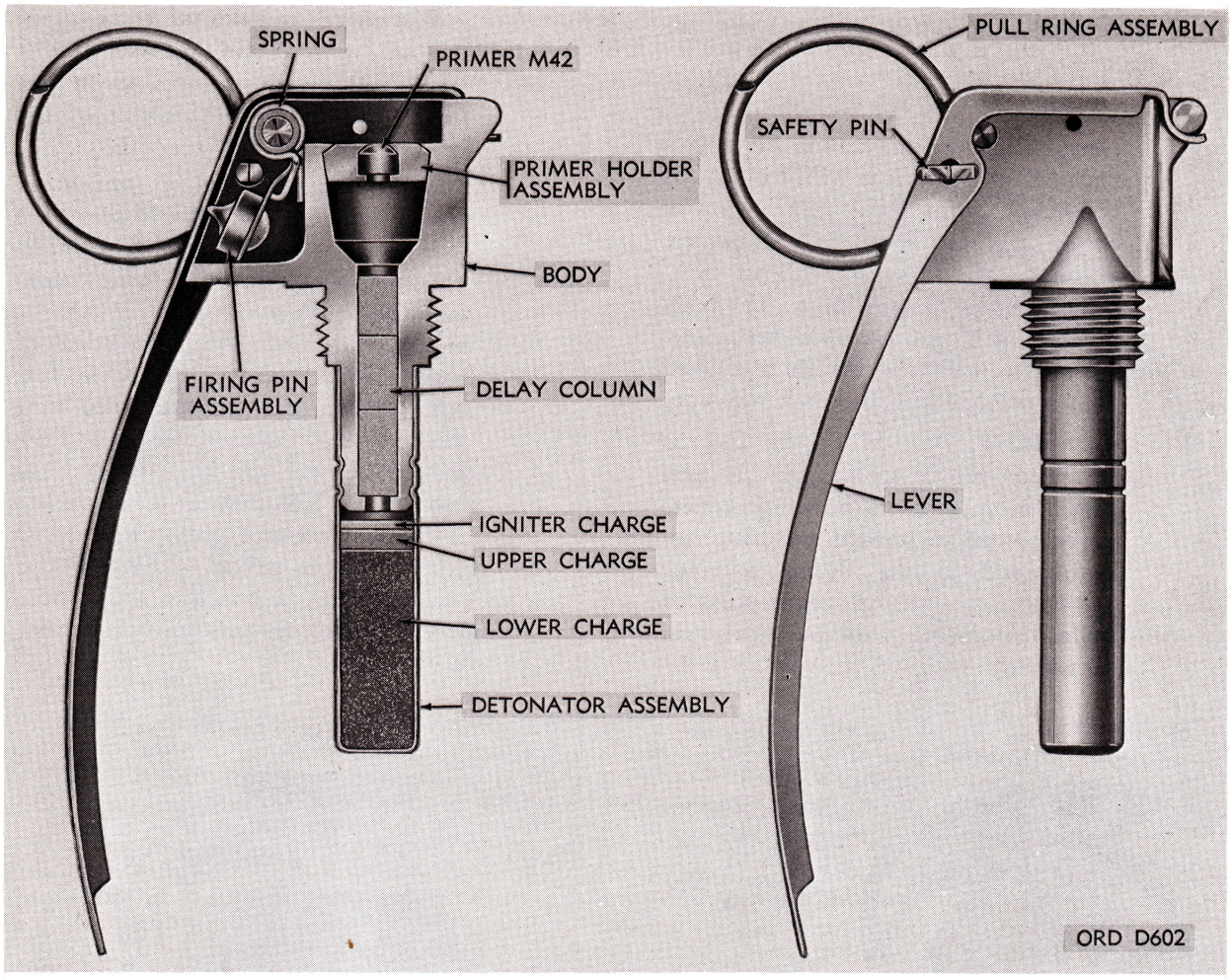


Figure 2–5. Fuze, hand grenade, M215.

(4) *Preparation for use.* Similar to Mk2 preparation for use (para. 2–4*d*).

(5) *To fire.* See paragraph 2–4*e*.

(6) *Disarming.* See paragraph 2–4*f*.

(7) *Capabilities.* The average soldier can throw the fragmentation grenade M26-series approximately 40 meters. The effective casualty radius is 15 meters, fragments are projected much further.

b. Grenade, Hand: Fragmentation, M26A2 w/ Fuze, Hand Grenade: M217.

(1) *General.* The fragmentation hand grenade M26A2 with fuze M217 was developed as a replacement for fragmentation hand grenades Mk2, M26, and M26A1 with fuzes M204A1 and M204A2 and grenade M26A2 with fuze M215. Fuze M217, developed in order to provide an impact capability for the hand grenade, normally functions on impact. However, if impact occurs prior to arming or impact is insufficient to function fuze, the fuze will function within 3 to 7 seconds after the lever is released. Grenade M26A2 assembled with fuze M217 (impact and delay functioning) can be distinguished from the grenade M26 Series assembled with the delay-functioning-type fuze (e.g., M204-series and M215) in that the lever

for fuze M217 is marked IMPACT in raised (embossed) lettering while the levers for the delay-functioning-only types are unmarked.

(2) *Description.*

(*a*) *General.* The fragmentation hand grenade M26A2 with fuze M217 (fig. 2–6) consists of three basic: an explosive charge, a grenade body, and an electric impact-functioning fuze with an overriding delay-function feature. The body consists of a smooth, thin-sheet, steel shell. The inside of the shell is lined with a notched fragmentation wire coil.

(*b*) *Fuze, M217.* Fuze M217 (fig. 2–7) is equipped with a safety pin and pull ring. The split end of the safety (cotter) pin is spread to prevent accidental removal and arming during shipping and handling. The pull ring is provided to facilitate removal of the safety pin for arming.

Note. A pull of 10 to 30 pounds is required to withdraw the safety pin.

Warning: **Accidental removal of the safety pin and release of the lever will result in arming of the fuze followed by detonation of the grenate within 3 to 7 seconds.**

The major components of fuze M217 are as follows: a bouchon assembly, a fuze body assembly (which contains a thermal power supply, a thermal-arming disk, a delay-function switch, an impact switch and an electric detonator), and an RDX booster pellet. The fuze body components are assembled in a steel case 2.7 inches in length and approximately ½ inch in diameter. The fuze weighs 2.68 ounces. The bouchon assembly consists of a pull ring, a safety (cotter) pin, a striker, a hinge pin, a striker spring, a bouchon body and a lever. The fuze body assembly is hermetically sealed.

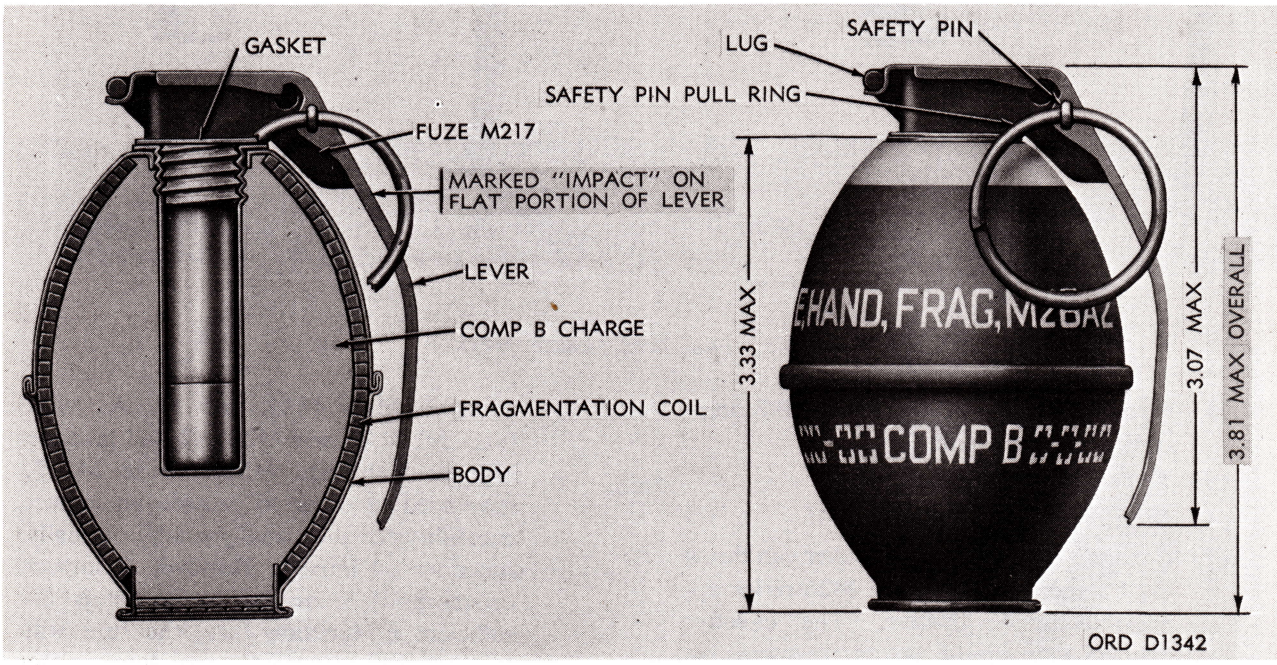


Figure 2–6. Grenade, hand: Fragmentation, M26A2 w/fuze, hand grenade: M217—cross section and external view.

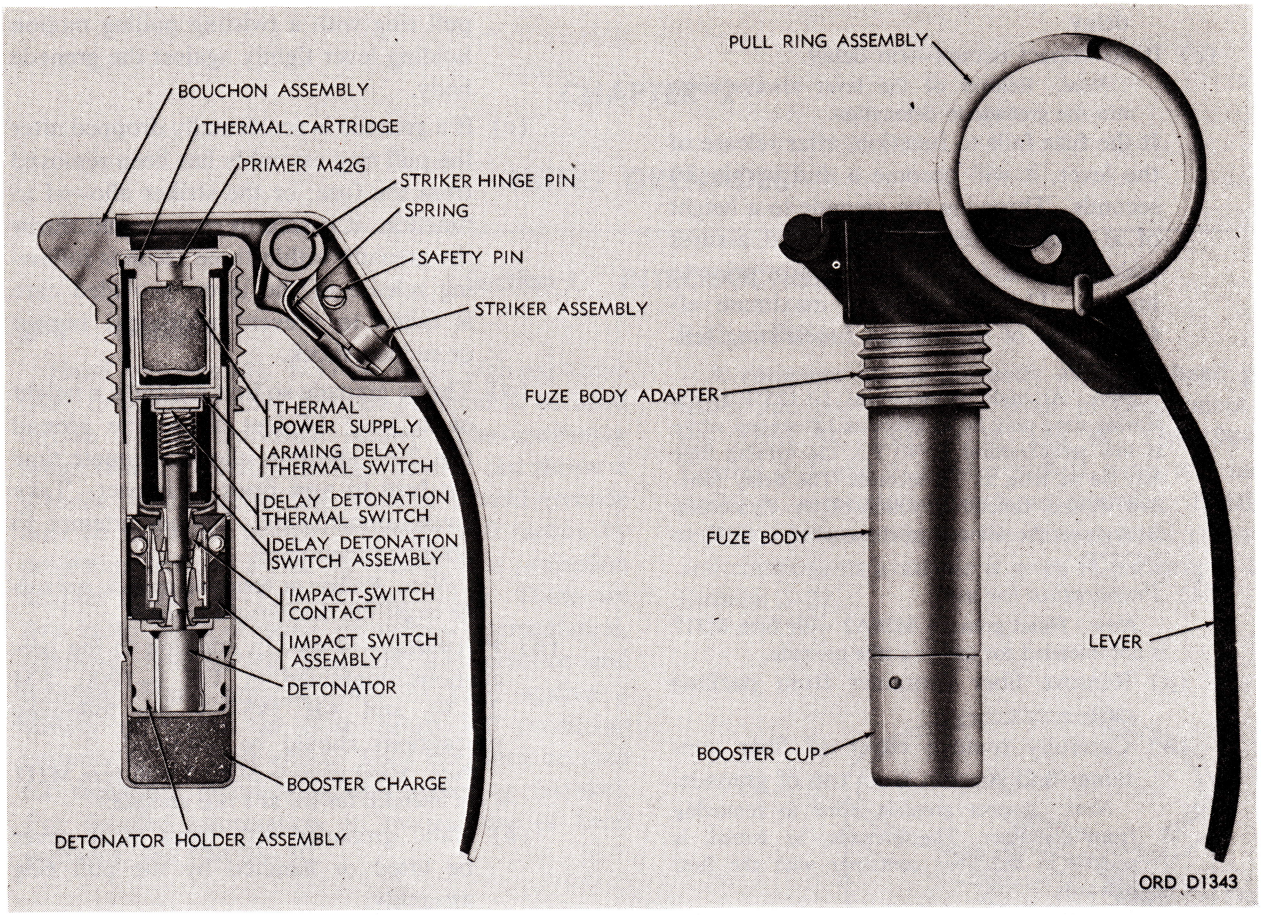


Figure 2–7. Fuze, hand grenade: M217—cross section and external view.

(*c*) *Data.*

1. Grenade.

Model M26A2
Type ..... Fragmentation
Weight (w/o fuze) ..... 12.52 ounces
(w/fuze) ..... 15.20 ounces
Explosive charge .. 6.3 ounces Composition B
Dimensions:
Length (w/fuze) ..... 3.81 inches
(w/o fuze) ..... 3.33 inches
Diameter ..... 2.25 inches
Material ..... Thin sheet steel, lined with notched fragmentation coil

2. Fuze.

Model M217
Type ..... Electric-impact functioning with an overriding delay-function feature
Weight ..... 2.68 ounces
Dimensions:
Length ..... 2.7 inches (visible 0.5–in.)
Diameter 0.57–inch
Primer:
Model M42G
Type ..... Percussion
Detonator:
Model T77
Type ..... Electric
Arming:
Method ..... Remove safety pin and release lever
Time of Arming Delay ..... 1 to 2 seconds

(3) *Functioning.* Upon releasing the lever, the striker assembly, through the action of the spring, throws off the lever and impacts the percussion primer. The primer initiates the thermal power supply which causes the fuze to arm within 1 to 2 seconds. After arming, the grenade will function:

(*a*) Upon proper impact—on impact

(*b*) If proper impact does not occur—on delay

(*c*) If no impact occurs—on delay.

Note. Release of the lever always commits the grenade to detonation.

If the fuze fails to function, after release of the lever, it will become a dud within 30 seconds. Throwing the grenade to a height of at least 16 feet above ground assures adequate time for the fuze to arm prior to impact. This will provide maximum effective use of the impact functioning feature.

Note. At high temperatures (+125°F.), the arming time may be as short as 1.0 second while at low temperatures (—40°F.), the arming time may be as long as 2.0 seconds. The delay function device functions within 3 to 7 seconds throughout the temperature range of —40°F. to +125°F.

(4) *Preparation for use.*

Note. Hand grenade M26A2 with fuze M217 is not intended for use as a rifle grenade.

(*a*) Remove fiber container from packing case.

(*b*) Carefully remove cover of fiber container and support from top of grenade.

Note. Inspect grenade prior to removing from container. The grenade, as issued, is packed in the fiber container with the fuze upwards.

(*c*) Inspect for lever position and condition, and that the legs of the safety (cotter) pin are spread apart.

Warning: **If the grenade is found to be packed upside down or the safety pin is not properly in place, do not attempt to remove the grenade from the fiber container. Replace the support and cover and return the container to qualified ammunition personnel for disposition.**

(*d*) Remove the grenade from fiber container and inspect for defects which may affect functioning, such as, cracked grenade body, broken lever, broken lugs, and damaged safety pins and pull rings. Dispose of defective grenades as indicated in (*c*) above.

(5) *Use.*

(*a*) Grasp grenade in hand, holding lever firmly against the grenade body.

(*b*) With the other hand, pull safety pin pull ring with a twisting pulling motion holding lever tightly against the grenade body.

(*c*) If a grenade is accidentally dropped after the pull ring assembly has been removed from the fuze, or the striker allowed to function, it is safe to recover and throw the grenade within three seconds following release of the lever, provided care is taken to prevent additional impact or sudden shock.

(*d*) Throw grenade so that it attains a height of at least 16 feet above the ground (fig. 2–8) and thus allows adequate time for fuze to arm prior to impact. Take cover immediately. Do not attempt to observe functioning.

Note. Rolling or bouncing grenade towards the target will detonate the grenade.

(6) *Precautions in use.* In addition to the precautions contained in TM 9–1900, FM 23–30, and AR 385–63, the following precautions should be observed.

Note. Hand grenade M26A2 with fuze M217 is not intended for use as a rifle grenade.

(*a*) Hand grenades with fuzes must never be lifted or handled by the pull ring assembly.

(*b*) Do not pull the safety pin of the pull ring assembly or release the lever until the grenade is to be thrown.

(*c*) Avoid additional impact or sudden shock to grenades in which strikers have been allowed to function.

(*d*) Fuzes will not be removed from hand grenades.

(7) *Disarming.* Once the safety pin has been removed, the grenade should be thrown. Do not attempt to replace the pin in order to safe the grenade.

(8) *Capabilities.* The average soldier can throw the grenade M26A2 approximately 40 meters. The effective casualty radius is 15 meters; fragments are projected much further.

(9) *Care, handling, and preservation.* The general provisions for care, handling, and preservation of hand grenades contained

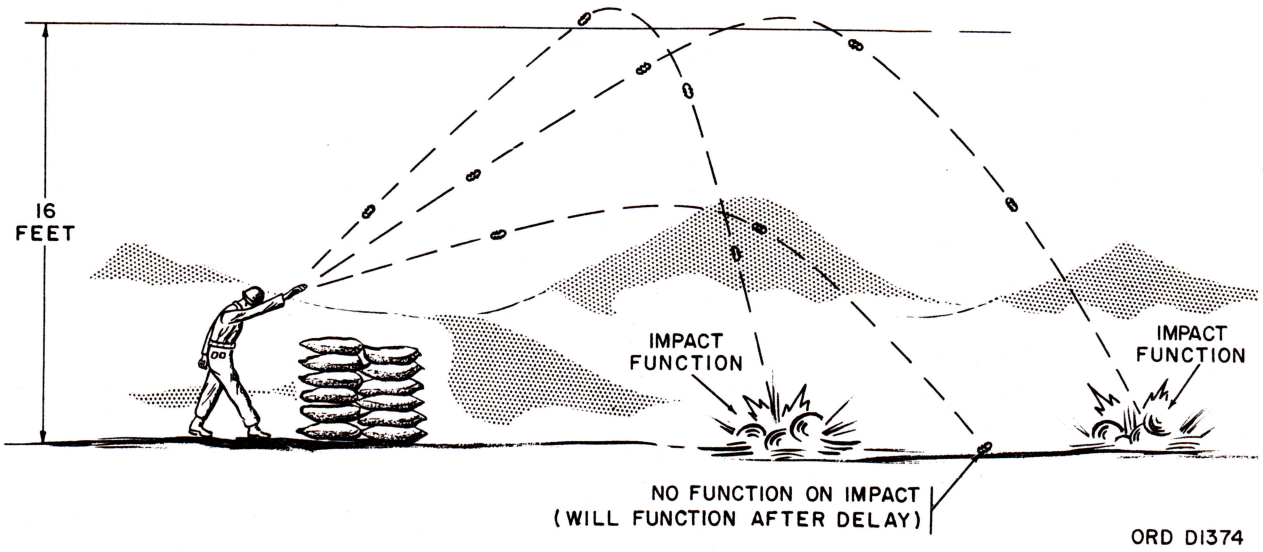


Figure 2–8. Impact functioning use of hand grenade M26A2 w/fuze M217.

in TM 9–1300–206 are applicable to hand grenades with fuze M217.

(10) *Painting and marking.* The grenade is painted olive drab and marked in yellow. A yellow band approximately ¼ inch in diameter is stenciled at the top of the grenade. The lever of the fuze M217 is marked IMPACT in raised (embossed) lettering.

(11) *Packing and marking.*

(*a*) *Packing.* Thirty packing containers are packed two layers deep in a wooden box. The box dimensions (in inches) are 19¾ by 11-9/16 by 12-1/32. The box with packing containers weighs approximately 51.0 pounds.

(*b*) *Marking.* All boxes and containers are marked in accordance with the provisions of TM 9–1900 and TM 9–1300–206.

Section III. ILLUMINATING HAND GRENADES

2–6. General

a. Description. Illuminating hand grenades are used principally for signaling and for battlefield illumination. They are used in a manner similar to that of ground signals (TM 9–1370–200). The principal difference between illuminating hand grenades and ground signals is that illuminating grenades are designed to burn on the ground and ground signals are designed to burn while suspended from a parachute. Illuminating hand grenades may be thrown by hand or projected from a rifle by using a projection adapter (para. 3–12) and a grenade launcher. Illuminating hand grenades should not be used on soggy or swampy ground; they may become embedded, with the result that little or no illumination is produced. The illuminating compound burns with a very hot flame and may be used for incendiary purposes against flammable targets. Because of its incendiary nature, caution should be exercised in the use of illuminating hand grenades to prevent fires which would be detrimental to tactical operations. For detailed information on battlefield illumination, see FM 20–60.

b. Precautions. Although illuminating hand grenades are not considered casualty-producing agents, death or serious injury may result if they are not handled properly Illuminating hand grenades must be protected from moisture and excessive heat. The

following precautions will be observed when handling or throwing illuminating hand grenades. Additional precautions may be found in paragraph 1–6, TM 9–1300–206, and FM 23–30.

(1) Do not remove illuminating hand grenade from sealed container until just before use.
(2) Do not pick up an illuminating hand grenade by the safety pin pull ring.
(3) If an illuminating grenade is dropped after the safety pin has been removed, pick it up quickly and throw it. An illuminating hand grenade can be thrown much further than a soldier can run in the remaining delay time (7 seconds total delay) of the fuze.
(4) Do not recover or tamper with illuminating grenades that have failed to function. These duds are to be recovered and destroyed only by qualified personnel.
(5) Grenades that are cracked, dented or deformed, should not be used.
(6) Do not tamper with, or attempt to disassemble illuminating grenades.

2–7. Grenade, Hand: Illuminating, Mk1

a. General. This grenade (fig. 2–9) resembles, in outward appearance, the fragmentation hand grenade M26 series. The Mk1 is the only type of illuminating hand grenade currently available and was developed by the Navy. It is used for illuminating and signaling purposes. The grenade may also be used as an incendiary grenade to start fires in dry grass, leaves, or brush.

b. Description.

(1) *General.* The illuminating hand grenade Mk1 consists of three basic parts: an illuminating charge, a body, and a fuze. The illuminating charge consists of a pyrotechnic composition ignited by a first fire composition which, in turn, is ignited by an igniter charge. The body is fabricated from thin sheet steel. The fuze is a special igniter-type fuze. The igniter consists of a quickmatch contained in a quickmatch bushing.

(2) *Data.*

Model number	Mk1
Type	Illuminating
Weight	10 ounces
Illuminating charge	3.5 ounces of pyrotechnic composition
Candlepower	55,000
Dimensions:	
Length	4.35 inches
Diameter	2.19 inches
Body	Thin sheet steel
Fuze:	
Type	Delay igniting
Delay time	7 seconds
Color	See table 1–1

c. Functioning. As issued, the igniter fuze is cocked and ready to fire. When the safety pin is withdrawn and the grenade thrown, it functions as follows:

(1) The striker, driven by its spring, forces the safety lever out of its path; the safety lever flies free from the grenade, releasing the striker.
(2) The striker strikes the percussion primer.
(3) The primer emits a small intense flame, igniting the quickmatch.
(4) The quickmatch burns for 7 seconds and ignites igniter charge.
(5) The igniter charge ignites first fire composition.
(6) The first fire composition ignites illuminating charge.
(7) The gas pressure produced by burning of illuminating charge causes upper half of body with fuze to be separated from the lower half containing the burning illuminating composition.

d. Preparation for Use. This grenade is prepared for use in the same manner as the fragmentation hand grenade Mk 2, as explained in paragraph 2–4*d*.

e. To Fire. This grenade is fired in the same manner as the fragmentation hand grenade Mk 2, as explained in paragraph 2–4*e*.

***Warning 1:* When the two halves of the body are separated by the burning of the illuminating charge, they may be projected with considerable velocity. Friendly troops in the area should take cover until the illumination can be seen.**

***Warning 2:* The illuminating composition burns with intense heat. Care must be taken to avoid throwing the grenade where it may start a dangerous fire.**

f. Disarming. Once the safety pin has been removed, the grenade is armed and must be thrown. Do not attempt to replace the pin in order to return it to a safe condition.

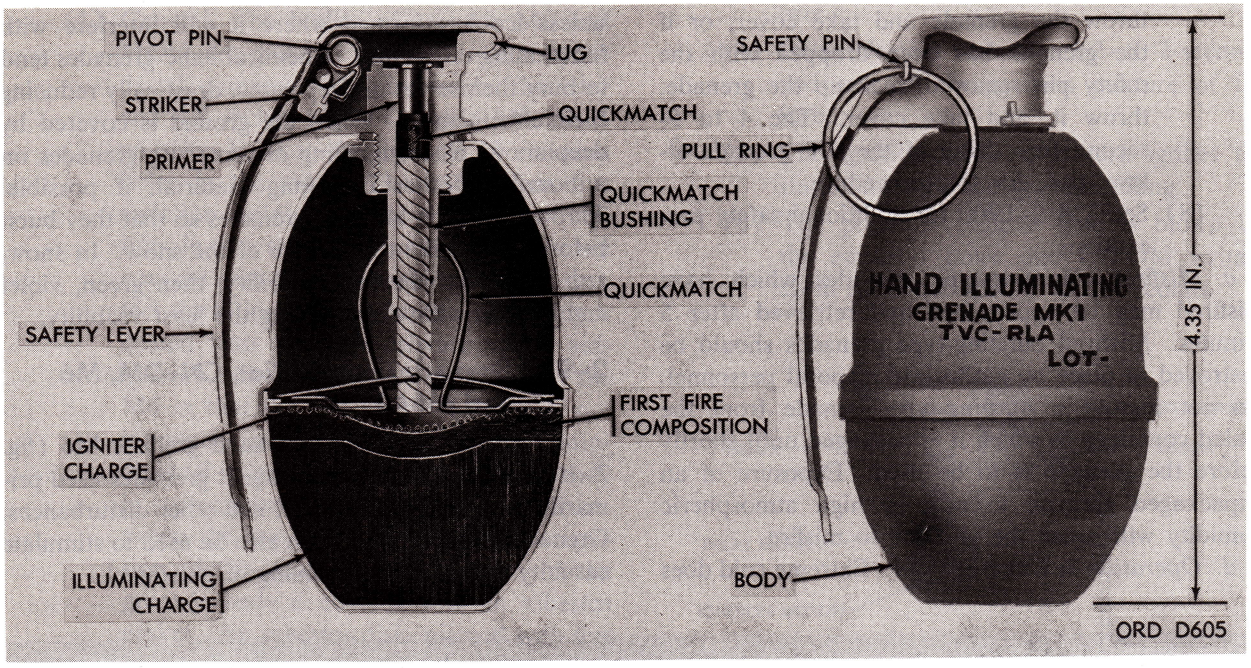


Figure 2–9. Grenade, hand: illuminating, Mk1 with fuze.

g. Capabilities. The average soldier can throw an illuminating hand grenade approximately 40 meters. By using a grenade projection adapter, the grenade may be projected approximately 200 meters. The illuminating charge will burn for approximately 25 seconds, producing 55,000 candlepower. The grenade will illuminate an area approximately 200 meters in diameter.

Section IV. CHEMICAL HAND GRENADES

2–8. General

a. Description. Chemical hand grenades are chemical-filled munitions designed primarily to be thrown by the individual soldier or projected from a rifle by use of a chemical grenade projection adapter. Chemical grenades are used to set fire to combustible objects, produce irritating gas, produce smoke for screening or signaling purposes, or a combination of these effects. Chemical grenades may also be used as boobytraps. For information on tactical use of chemical hand grenades, see FM 3–5.

b. Precautions. Observe the following safety precautions when handling chemical hand grenades:

(1) Wear protective masks when using riot control agent grenades.

(2) Have fire-fighting equipment readily available when training with chemical hand grenades.

(3) Do not use the pull-ring for lifting or handling grenades.

(4) Hold the safety lever firmly against the body of the grenade until the grenade is thrown.

(5) During training, bear in mind that fragments may be projected well beyond the anticipated radius of burst. Take cover when using a grenade which contains a bursting charge.

(6) If a smoke grenade is activated accidentally, throw it immediately. If it is dropped while activated, move immediately to a safe distance.

(7) If the safety lever on a white phosphorous

(WP) grenade is released accidentally, throw the grenade and take cover; or if the grenade has been dropped with the safety pin removed, pick up the grenade, throw it, and take cover. The 4 to 5-second fuze delay of the WP grenade allows time for this procedure.

(8) See TM 9–1900 for additional safety precautions.

c. Misfires. Burning-type grenades which have misfired may be approached and retrieved after 5 minutes. Misfired bursting-type grenades should be destroyed in place by authorized disposal personnel. Do not remove a burning-type grenade from the sealed container in which it is packaged until shortly before the grenade is to be used. Exposure of an unpackaged grenade to rain or high atmospheric humidity will cause the grenade to misfire.

d. Operation in Extreme Cold. Extreme cold does not affect the functioning of chemical hand grenades unless ice has formed where it will interfere with functioning of the fuze. Chemical hand grenades tend to bury themselves in deep snow, drastically reducing their effectiveness. When the ground is covered by deep snow, place signaling or screening grenades on a board or other insulating material, if possible. Throw or launch bursting grenades so that they burst before they strike the surface of the snow. In snow, red smoke has the best visibility, then green, violet and yellow, with white having the least visibility.

2–9. Grenade, Hand: Riot, CN–DM, M6 and M6A1

a. General. CN–DM riot hand grenade M6 (fig. 2–10) and M6A1 are irritant-agent grenades used primarily to control riots, mobs, and other disturbances. Grenade M6 and M6A1 can also be used to stimulate casualty agents during training of personnel.

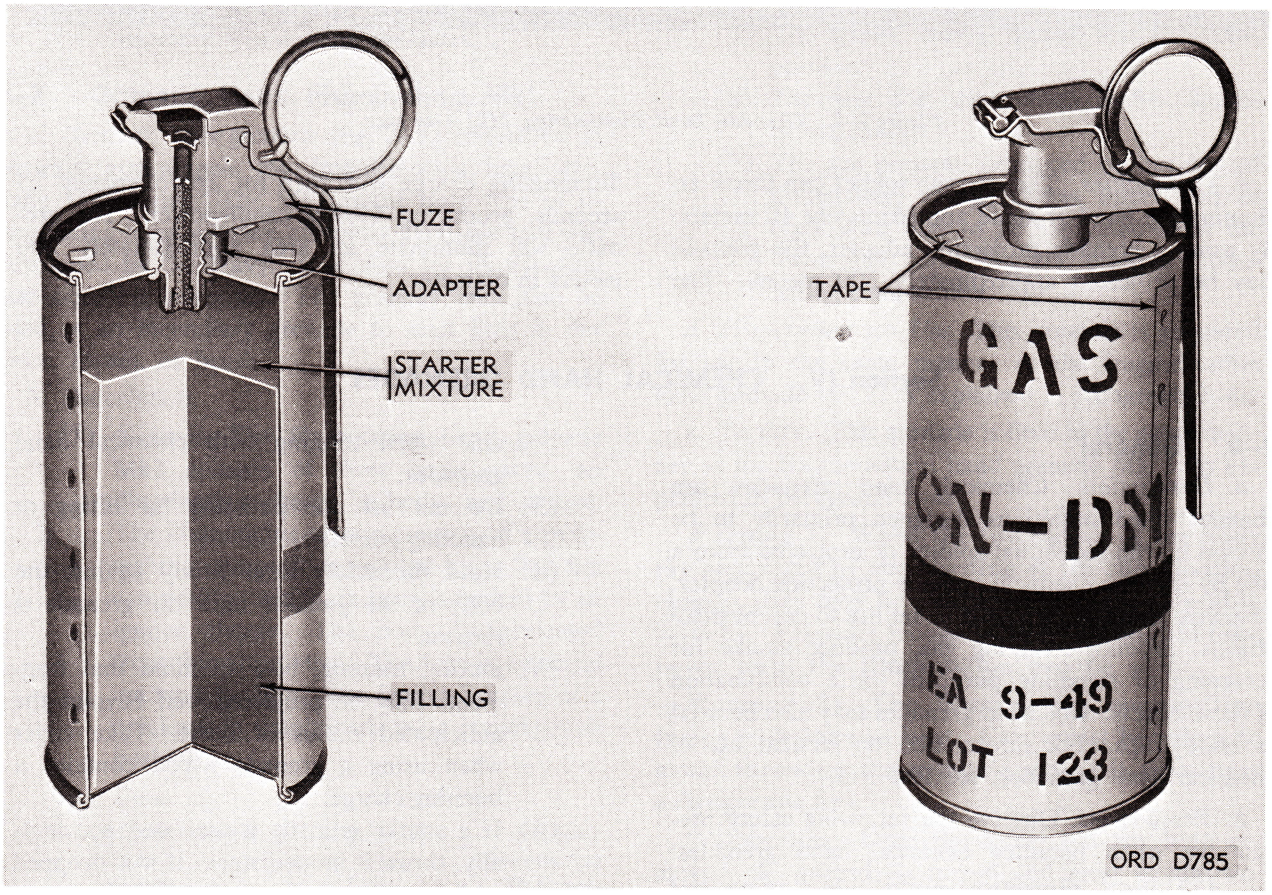


Figure 2–10. Grenade, hand: riot, CN–DM, M6 w/ fuze M201A1.

b. Description.

(1) *General.* The bodies of grenade M6 and M6A1 are made of thin sheet-metal cylindrical containers 2.5 inches in diameter and 4.5 inches high. Grenade M6 has 6 emission holes in the top and 18 emission holes in the sides. The M6A1 has five emission holes: one in the bottom and four in the top. The emission holes are covered with pressure-sensitive tape to protect the filling from moisture. The filling is coated with a starter mixture which aids ignition. Grenade M6A1 differs from the M6 in that the CN and DM filling is not intimately mixed but is pressed into individual cups, packed in the grenade body in such manner that there is no contact between the two types of filling before ignition of the grenade. The bottom of the grenade body is covered with an asbestos gasket. An asbestos disk, pierced with five holes which correspond to the holes in the top of the grenade, is crimped to the underside of the top of the grenade.

(2) *Data.*

Model number	M6 or M6A1
Type	Irritant agent
Weight	(M6) 1.06 pounds; (M6A1) 1.25 pounds
Charge	(M6) 0.64 pound CN–DM; (M6A1) 4.6 ounces DM, 4.9 ounces CN
Dimensions:	
Diameter	2.5 inches
Height (without adapter)	4.5 inches
Body	Sheet metal
Fuze	M201A1
Type	Delay igniting
Delay time	1.2 to 2 seconds

c. Functioning. As issued, the hand grenade fuze (fig. 2–11) is cocked and restrained from functioning by a safety pin. When the safety pin is withdrawn (fig. 2–12) and the grenade thrown, a sequence of function, as outlined in (1) through (6) below, is initiated:

(1) The striker, driven by its spring, forces the safety lever out of its path, and the safety lever is thrown free of the grenade and releases the striker.

(2) The striker strikes the percussion primer.

(3) The primer emits a small intense spit of flame, igniting the delay element of the fuze.

(4) Delay element burns for 1.2- to 2-seconds and sets off the ignition mixture of the fuze.

(5) The ignition mixture, in turn ignites the starter mixture and grenade filling.

(6) The pressure-sensitive tape is blown off the emission holes and CN-DM irritant agent is emitted for 20- to 60-seconds.

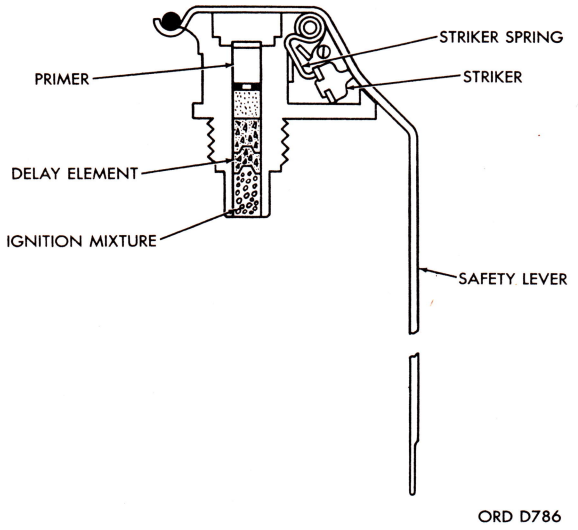


Figure 2–11. Fuze, hand grenade, M201A1.

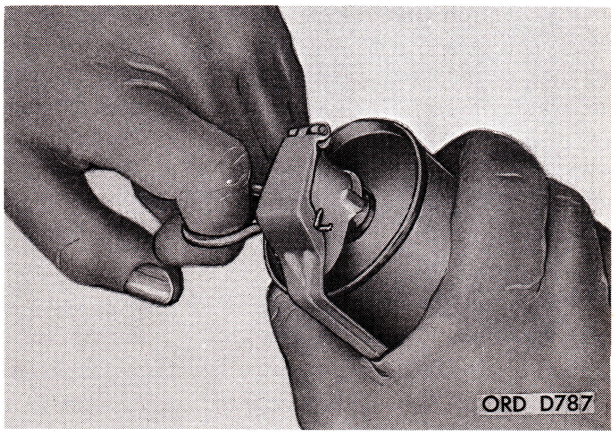


Figure 2–12. Removing safety pin from grenade M6.

d. Disarming. Do not disarm the CN–DM grenade, (para. 2–4*f*). Misfired grenades may be retrieved after 5 minutes as explained in paragraph 2–8*e*.

e. Capabilities. The irritant given off by this grenade causes extreme nausea and vomiting, in addition to producing effects of tear gas. The burning time of this grenade is from 20 to 60 seconds. This grenade may be launched from a rifle by using the grenade projection adapter M2A1. Use of the rifle extends the range of the grenade 120 meters.

2–10. Grenade, Hand: Riot, CN, M7 and M7A1

a. General. Grenade M7 and M7A1 (fig. 2–13) are irritant-agent grenades used primarily to control riots, mobs, and other disturbances. Grenade M7 and M7A1 can also be used to simulate casualty agents during training of personnel.

b. Description.

(1) *General.* Grenade M7 and M7A1 are cylindrical containers filled with CN (chloracetophenone) and fitted with igniting fuzes M201A1 (figs. 2–11 and 2–13). The body of the grenades is of thin sheet-metal 2.5 inches in diameter and 4.75 inches high. Grenade M7 has 18 emission holes in the sides and none in the bottom, whereas, the M7A1 has 4 emission holes in the top and one in the bottom. The emission holes are covered with pressure-sensitive tape to protect the filling from moisture. Fuze M201A1 is screwed into an adapter in the top of the grenade. The filling is a mixture of CN, sugar, potassium chlorate, potassium bicarbonate, and a finely divided inert substance (diatomaceous earth). The filling is compressed into

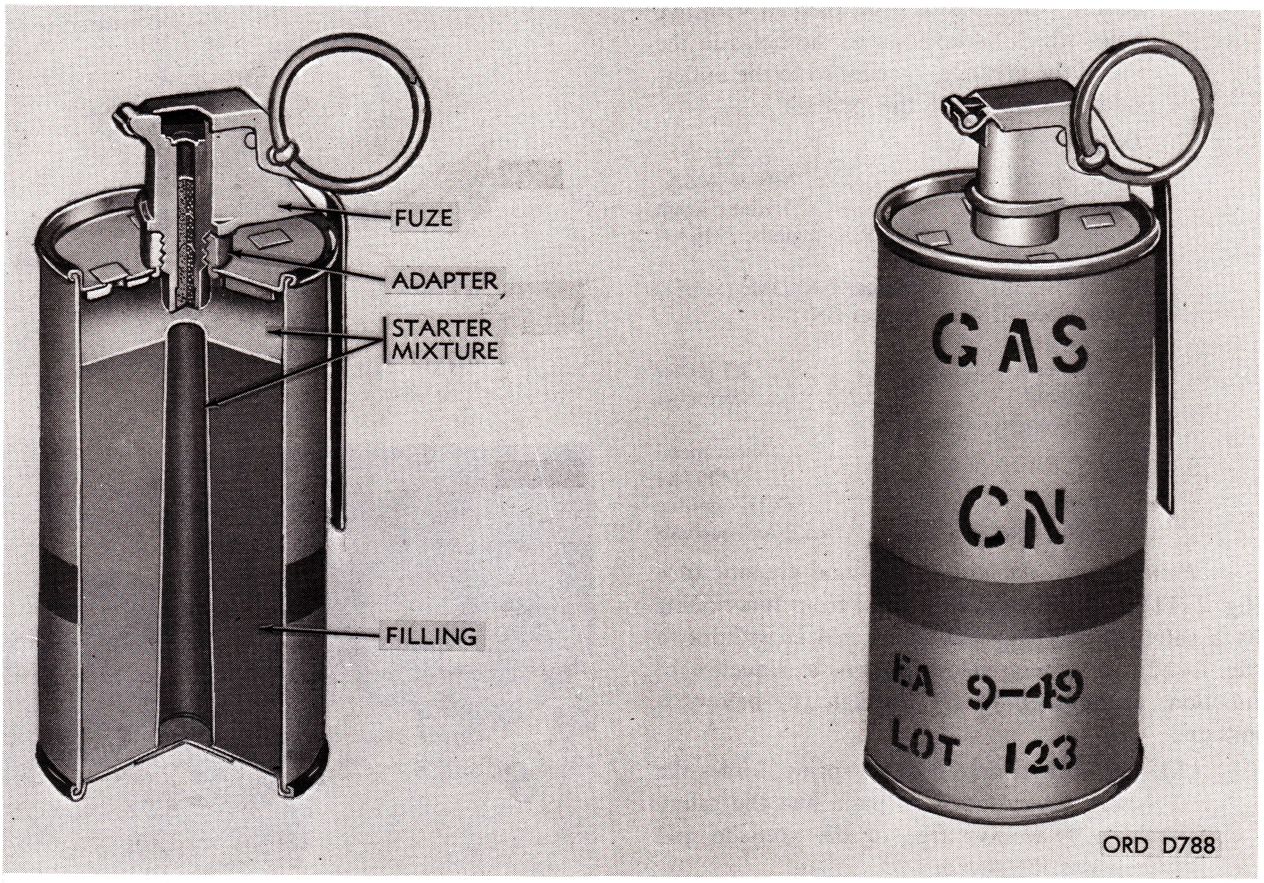


Figure 2–13. Grenade, hand: riot, CN, M7A1, w/fuze M201A1.

the grenade body, a tapered hole is formed through the body of the filling. The top surface of the filling and the tapered walls of the hole are coated with starter mixture to aid ignition of the fuel by the fuze.

(2) *Data.*

Model number ..... M7 or M7A1
Type ..... Irritant agent
Weight ..... (M7) 17 ounces; (M7A1) 18½ ounces
Charge ..... (M7) 10¼ ounces CN; (M7A1) 12½ ounces CN
Dimensions:
  Diameter ..... 2.5 inches
  Height ..... Approximately 4.75 inches without fuze
Body ..... Sheet metal
Fuze M201A1
  Type ..... Delay igniting
  Delay time ..... 1.2- to 2-seconds

c. Functioning. These grenades function in the same manner as grenade M6 (para. 2–9).

d. Disarming. These grenades must not be disarmed, see paragraph 2–4*f*. Misfired grenades may be retrieved after 5 minutes as explained in paragraph 2–8*c*.

e. Capabilities. The irritant given off by these grenades causes a burning sensation to the eyes and causes them to water profusely. Excessive amounts of this irritant can cause temporary blindness. Grenades M7 and M7A1 may be launched from the grenade projection adapter M2A1. The burning time of these grenades is from 20 to 60 seconds. Use of the rifle for launching extends the range of the grenade to 120 meters.

2–11. Grenade, Hand CS, ABC–M7A2 and M7A3

a. General. Grenades M7A2 and M7A3 are irritant agent, special-purpose munitions used to control riots, mobs, and other disturbances. These grenades may also be used to simulate casualty agents during training of personnel. These grenades are similar in external appearance to CN, CN-DM, or HC grenades.

b. Description.

(1) *General.* The body of the grenade, ABC M7A2 and M7A3, is of a thin-sheet-metal cylindrical container 2.5 inches in diameter and 4.75 inches high. A grenade igniting fuze M201A1 is screwed into the adapter in the top of the grenade body. Four emission holes in the top of the grenade and one in the bottom are covered with pressure-sensitive tape to protect the filling from moisture. The filling is compressed into the grenade body, a tapered hole being formed through the body of the filling. The top surface of the filling and the tapered walls of the hole are coated with starter mixture to aid ignition of the fuel by the fuze.

(2) *Data.*

Model number ..... ABC M7A2 or M7A3
Type ..... Irritant agent
Weight ..... 15½ ounces (approx.)
Charge:
  ABC M7A2 ..... 5.5 ounces burning mixture and 3.5 ounces of powdered CS agent in gelatine capsules
  M7A3 ..... 7.45 ounces burning mixture and 4.5 ounces of pelletized CS agent
Dimensions:
  Diameter ..... 2.5 inches
  Height ..... 4.15 inches (without adapter)
Body ..... Sheet metal
Fuze ..... M201A1, 1.2- to 2-seconds
  Type ..... Delay igniting
  Delay time ..... 1.2- to 2-seconds

c. Functioning. The grenades function in the same manner as grenade M6 (para. 2–9).

d. Disarming. These grenades are not disarmed, see paragraph 2–4*f*. Misfired grenades may be retrieved after five minutes as explained in paragraph 2–8*c*.

e. Capabilities. The grenades are filled with CS, which is an irritant which effects the eyes, nose, and throat. This agent may also irritate the skin. The irritant is emitted from this grenade for 15- to 35-seconds. This grenade may be hand thrown or launched from a rifle by use of the grenade projection adapter M2A1. Use of the rifle for launching extends the range of the grenade to 120 meters.

2–12. Grenade, Hand: Smoke, HC, AN–M8

a. General. The smoke grenade AN–M8 (fig. 2–14) is used to generate white smoke for signaling and screening. The grenade is used for ground-to-air and ground-to-ground signaling, and for screening the activities of small units for short periods of time.

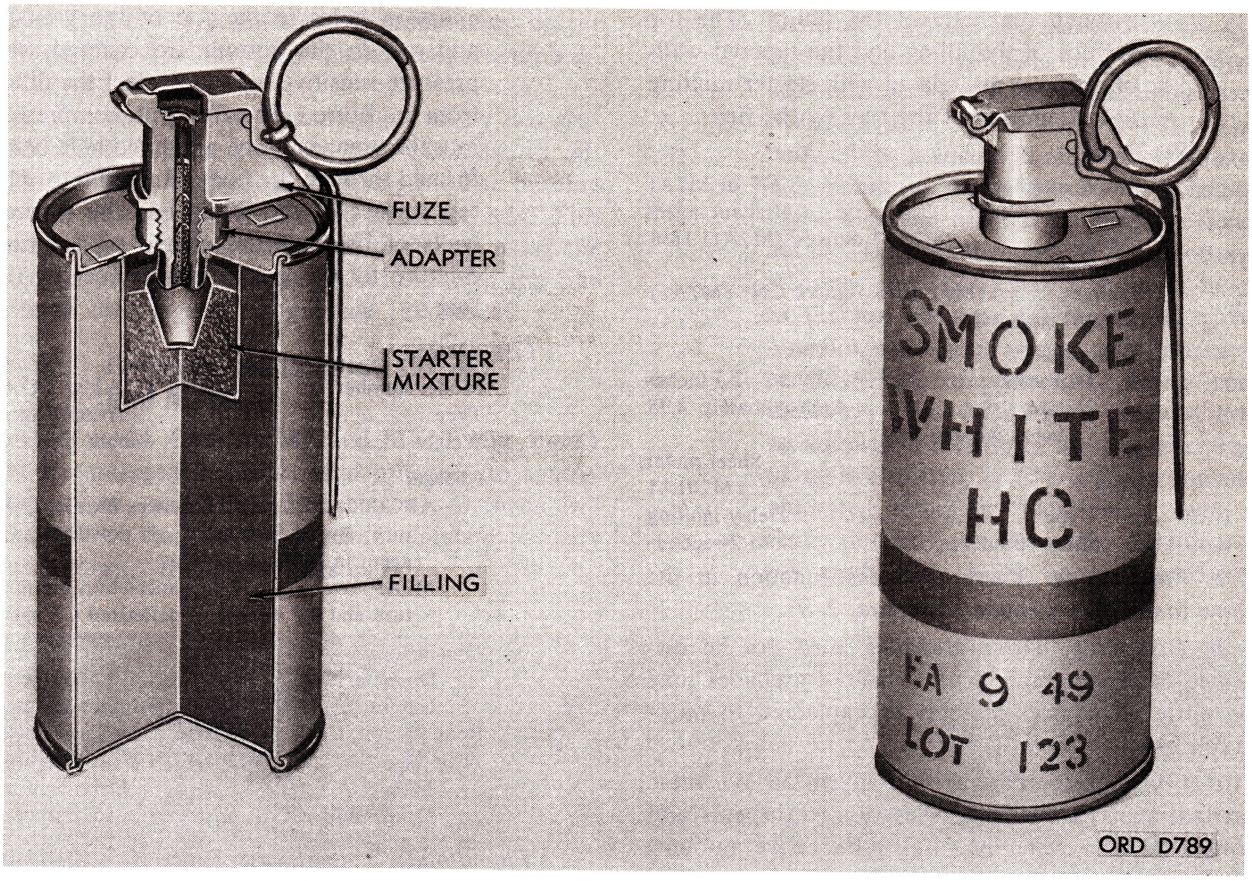


Figure 2–14. Grenade, hand: smoke, HC, AN–M8, w/fuze, M201A1.

b. Description.

(1) *General.* Smoke grenade AN–M8 is a cylindrical metal container 2.5 inches in diameter and 4.5 inches high. The grenade AN-M8 is filled with 19 ounces of type C HC smoke mixture and is fitted with a grenade igniting fuze M201A1 (fig. 2–11). Four emission holes in the top of the grenade are covered with pressure-sensitive tape to protect the filler from moisture. A plastice cut set in the top of the filling contains starter mixture which is centered under the fuze. Fuze M201A1 is screwed into an adapter in the top of the grenade.

(2) *Data.*

Model number	AN–M8
Type	Smoke
Weight	1½ pounds
Dimensions:	
Diameter	2.5 inches
Height (without adapter)	4.5 inches
Body	Sheet metal
Fuze	M201A1
Type	Delay igniting
Delay time	1.2- to 2-seconds

c. Functioning. This grenade functions in the same manner as grenade M6 (para. 2–9).

d. Disarming. This grenade is not disarmed (para. 2–4*f*). Misfired grenades may be retrieved after five minutes, as explained in paragraph 2–8*c*.

e. Capabilities. Grenade AN–M8 is filled with HC smoke mixture which produces a dense white smoke for 105- to 150-seconds. This grenade may be hand thrown or launched from a rifle by use of the grenade projection adapter M2A1. Use of the rifle for launching extends the range of the grenade to 120 meters.

2–13. Grenade, Hand: Incendiary, TH3, AN–M14

a. General. Grenade AN–M14 (fig. 2–15) is an incendiary grenade designed primarily to provide a source of intense heat for destroying equipment. If desired, this grenade may be converted to a bursting-type munition for producing casualties. Grenade AN–M14 may be modified for electrical ignition by replacing the fuze assembly with an electric squib. These features make this grenade easily adaptable to boobytrapping techniques.

b. Description.

(1) Grenade AN–M14 is a cylindrical container filled with 26½ ounces of incendiary mixture and fitted with a grenade igniting fuze M201A1 (fig. 2–13). The body of the grenade is a thin-sheet-metal cylinder 2.5 inches in diameter and 4.5 inches high, (without adapter) with four holes for the relief of pressure during ignition. Fuze M201A1 is screwed into an adapter in the top of the grenade. The standard filling is thermate TH3 and flare composition M8. The top of the filling has a central indentation and is covered with starter mixture. The holes in the top of the grenade are covered with pressure-sensitive tape to protect the filling from moisture.

(2) *Data.*

Model number	AN–M14
Type	Incendiary
Weight	32 ounces
Dimensions:	
Diameter	2.5 inches
Height	4.5 inches
Charge	26½ ounces TH3 (thermate) (and flare composition M8)
Body	Sheet-metal

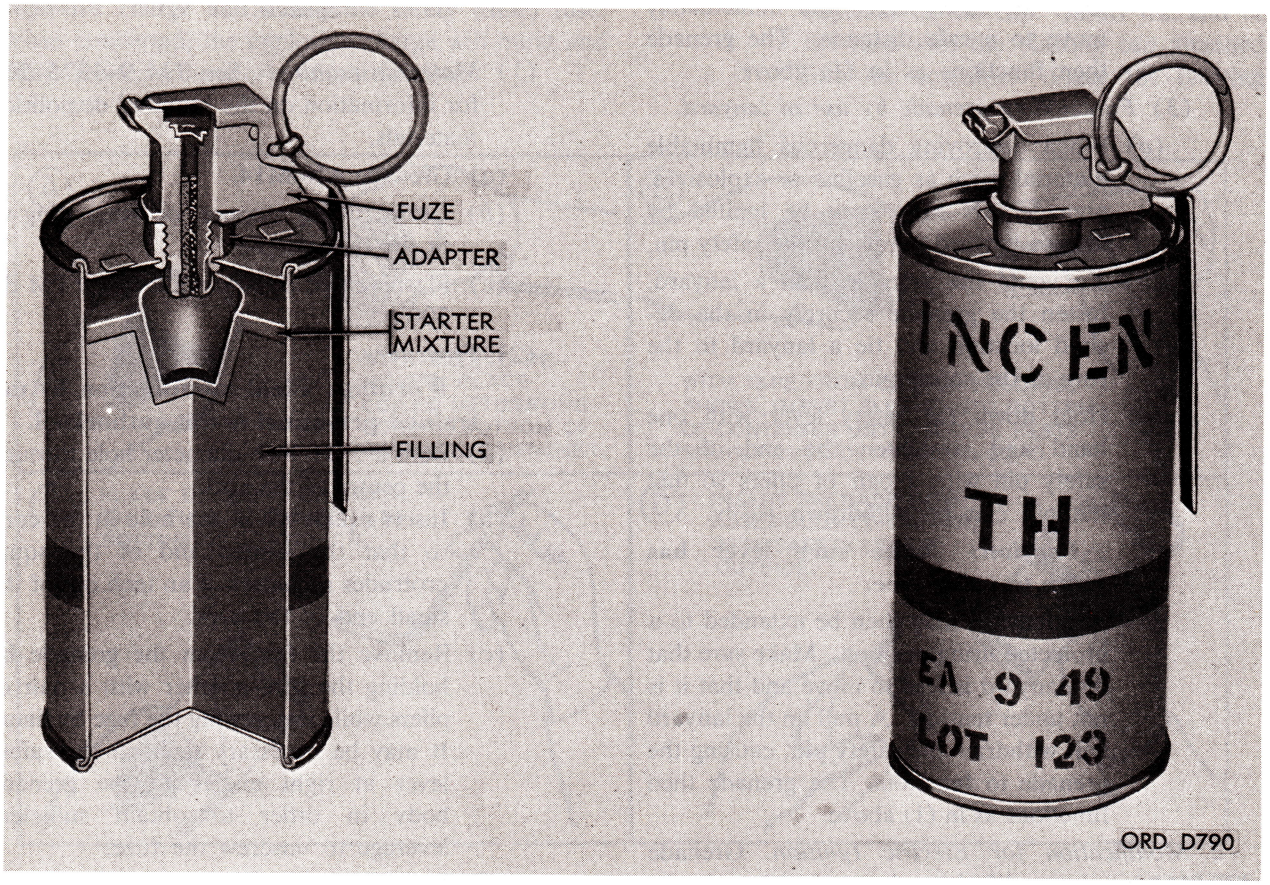


Figure 2–15. Grenade, hand: TH3, AN–M14, incendiary, w/fuze, M201A1.

Fuze M201A1
Type ..... Delay ignition
Delay time ..... 1.2- to 2-seconds

c. Functioning.

(1) This grenade functions in the same manner as grenade M6 (para. 2–9) except that this grenade has an incendiary grenade filler.

(2) *Placing the grenade in desired location.*

(*a*) Place the grenade in the desired location, preferably on a flat surface.

(*b*) If it is necessary to fasten the grenade in place, use a metal fastening, as the heat from the burning grenade will quickly burn through flammable material.

(*c*) Hold down the safety lever with one hand and withdraw the safety pin witn the other.

(*d*) When ready to ignite the grenade, release the safety lever and immediately move to a safe distance. The grenade then functions as in (1) above.

(3) *Functioning grenade by use of lanyard.*

(*a*) When destroying dangerous flammable material, such as gasoline or explosives, grenade AN–M14 may be ignited by using a lanyard to remove the safety pin.

(*b*) To ignite the grenade with a lanyard, fasten the grenade securely in the desired location and tie a lanyard to the ring of the safety pin.

(*c*) Hold down the safety lever with one hand and straighten the end of the safety pin with a pair of pliers so that the pin can be withdrawn easily.

Caution: **Make sure lever has room to swing free.**

(*d*) The lanyard may then be extended to a protected firing position. Make sure that the lanyard is free to move and that it is not under tension. A pull on the lanyard will withdraw the safety pin, causing the grenade to function. The grenade then functions as in (1) above.

d. Modification for Electric Ignition. Grenade AN-M14 may be modified for electric ignition (fig. 2–16) by replacing the fuze assembly with an electric squib.

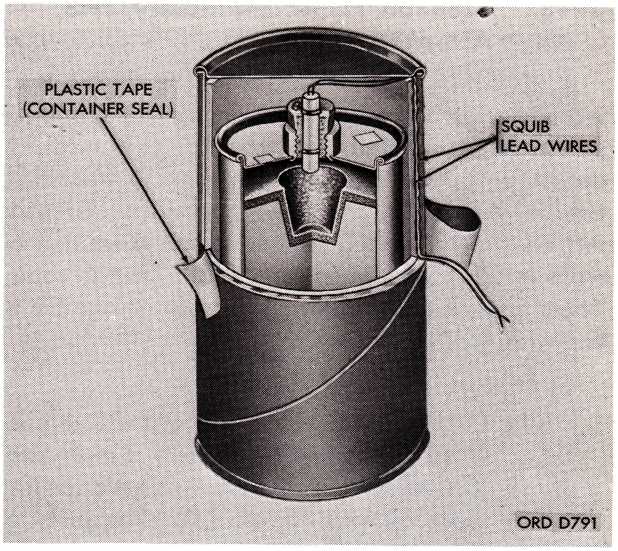


Figure 2–16. Grenade, AN–M14, modified for electric ignition.

(1) *Materials required.* See TM 9–1375–200 for information on the required demolition materials.

(*a*) Grenade AN–M14.

(*b*) Cork, rubber stopper, or other plug to fit the fuze adapter.

(*c*) Flash-vented electric squib M1 (TM 3–300).

(2) *Procedure.*

Warning: **Field modification by untrained personnel is not authorized.**

(*a*) Bore a 5/16-inch diameter hole through the center of the cork.

(*b*) Insert squib M1 in the hole in the cork so that the vented end of the squib protrudes a quarter of an inch out of the small end of the cork.

(*c*) Remove the fuze from the grenade by holding the fuze adapter with a pair of pliers while unscrewing the fuze by hand. It may be necessary to bend the safety lever at right angles to the grenade body in order to obtain sufficient leverage to unscrew the fuze.

(*d*) Loosen the starter mixture under the fuze opening with a sharpened piece of wood.

Warning: **Do not loosen the starter mixture with a metal tool or device that might cause sparking.**

(*e*) With squib in place, screw the cork into the fuze adapter, small end first, until a tight seal is formed. The cork should be long enough to protect the exposed end of the squib when the flash end of the squib is level with the top of the starter mixture.

(*f*) Waterproof the squib and cork with melted wax or other sealing compound.

(*g*) The modified grenade can be returned to the packaging container for protection from moisture.

(*h*) To ignite the grenade, connect the squib wires to a source of electricity.

e. Conversion To a Bursting Munition. AN–M14 grenade may be converted to a bursting munition (fig. 2–17) by placing it in its container with an explosive charge and a suitable safety (time) fuse. When converted, the explosive charge will burst and throw molten iron over a 35-yard radius.

(1) *Materials required.*

(*a*) Grenade AN–M14.

(*b*) Grenade packaging container.

(*c*) Detonating cord—4 feet.

(*d*) Safety fuse (time blasting fuse)—8 inches.

(*e*) Nonelectric blasting cap.

Warning: **Do not subject the blasting cap to shock or heat.**

(2) *Procedure.*

(*a*) Remove the grenade from its packaging container and remove the sleeve from the interior of the container.

(*b*) Coil the detonating cord and place it in the bottom half of the container (fig. 2–15). Replace the sleeve in the bottom of the container, thus wedging the detonating cord in place.

(*c*) Crimp the blasting cap to the safety fuse and form a right-angle bend in the fuse adjacent to the cap. Insert the end of the fuse with the blasting cap attached into the container. Place the blasting

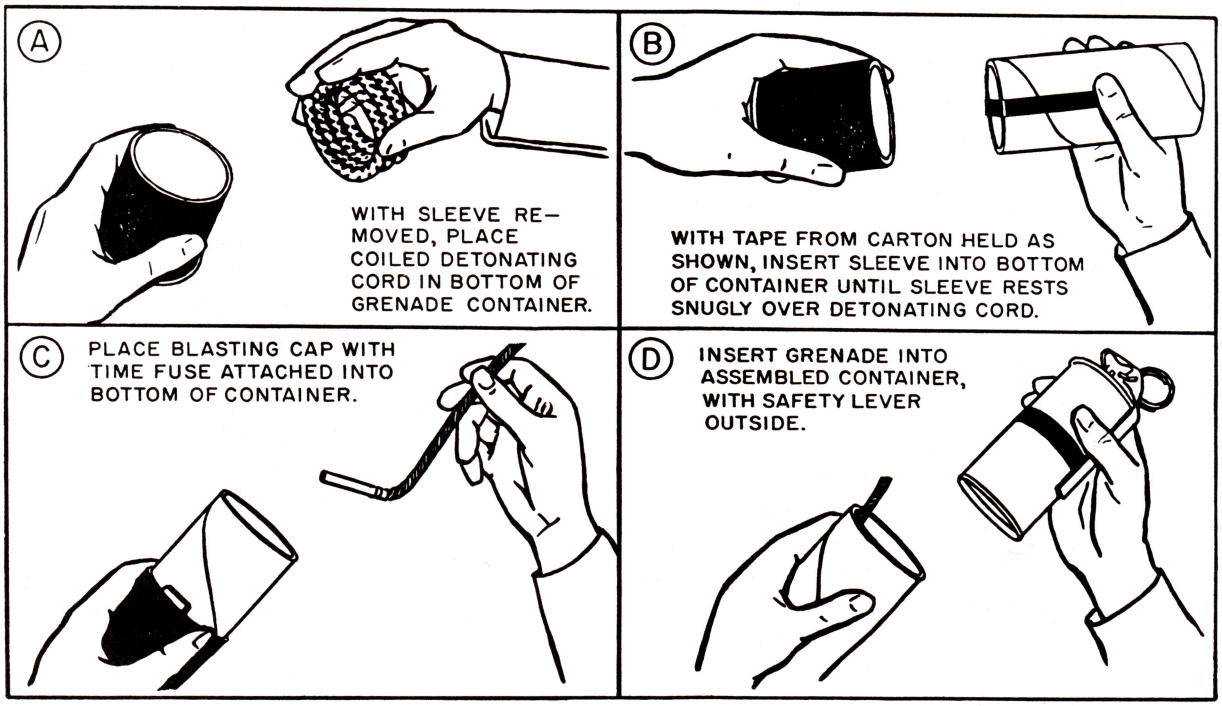


Figure 2–17. Procedure for concerting grenade AN–M14 to a bursting munition.

cap in contact with the detonating cord and allow the free end of the fuse to extend beyond the container.

Note. Make certain that the blasting cap remains in contact with the detonating cord.

(*d*) Insert the grenade into the sleeve, bottom end first, and slide it gently into the sleeve until it rests on the detonating cord. Keep the end of the safety lever outside the container. Wedge the grenade firmly in the container with tape from the container.

(*e*) Cut off the end of the safety fuse level with the top of the container sleeve.

(*f*) The converted grenade AN–M14 functions as in *c*(1) above, except that the heat from the burning thermate filling ignites the safety fuze, which explodes the blasting cap after approximately 30 seconds. The blasting cap sets off the detonating cord, which scatters molten iron over a 35-meter radius. The converted grenade can also be fired by a lanyard, as described in paragraph *c*(3) above, or used as a booytrap by substituting a trip wire for the lanyard.

f. Disarming. This grenade is not disarmed (para. 2–4*f*). Misfired grenades may be retrieved after 5 minutes, as explained in paragraph 2–8*c*.

g. Capabilities. Grenade AN–M14 may be used for destroying equipment, and by conversion to a bursting-type munition, for casualty effect in booby-trapping. This grenade may also be modified for electric ignition by replacing the fuze assembly with an electric squib. To extend the range of grenade AN–M14, grenade projection adapter M2A1 may be used. When this grenade is converted for casualty effect, molten iron is scattered over a 35-yard radius.

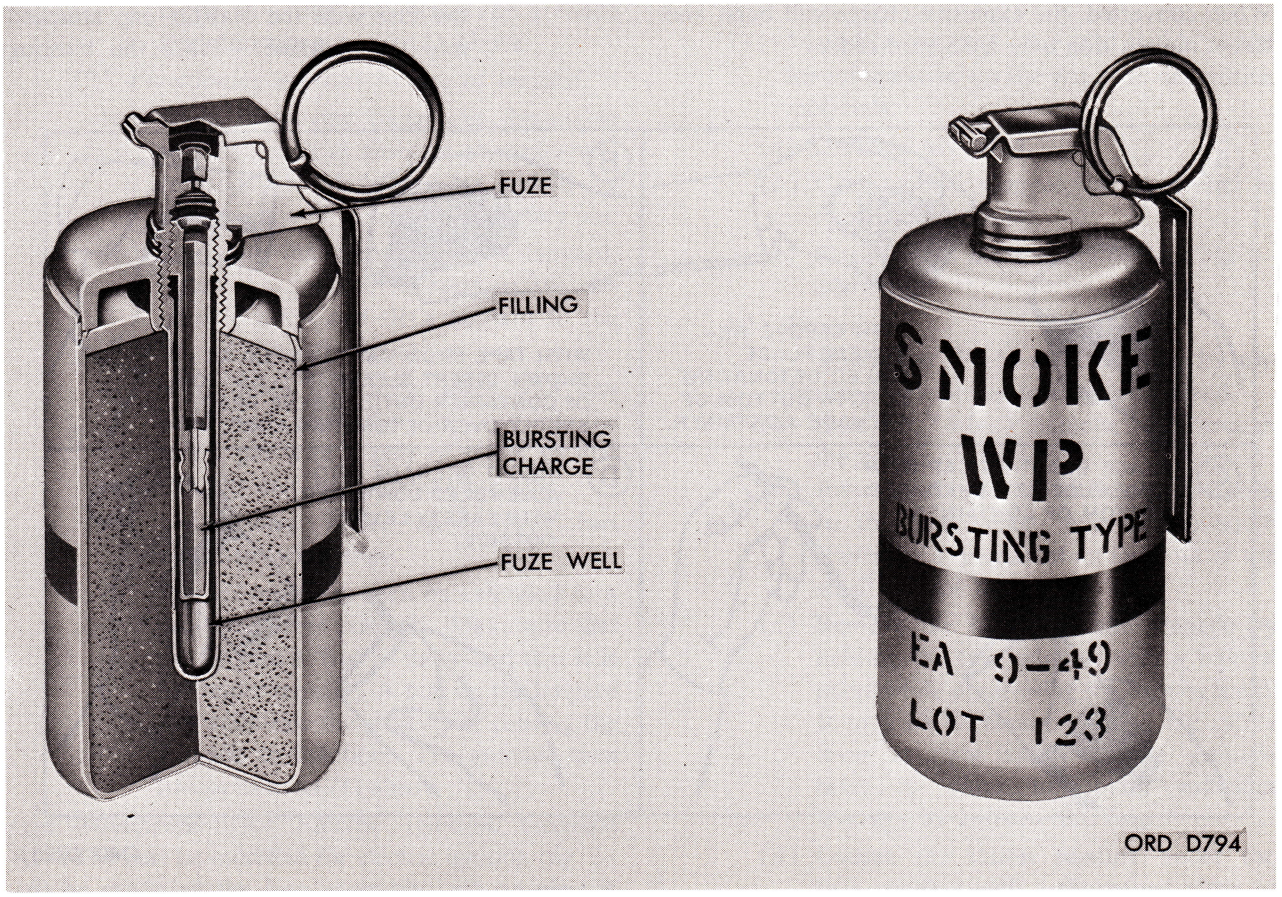


Figure 2–18. Grenade, hand: smoke, WP, M15 w/fuze M206A1.

2–14. Grenade, Hand: Smoke, WP, M15

a. General. Hand grenade M15 (fig. 2–18) is a white phosphorous (WP) smoke grenade. This grenade is a multi-purpose grenade. It is an effective antipersonnel weapon, incendiary agent, and signaling or screening smoke producer. The screening effect of the smoke is limited, however, as WP burns with intense heat and the smoke tends to rise rapidly. For information on hand and rifle grenade WP M34, see paragraph 2–18.

b. Description.

(1) *General.* Grenade M15 is a cylindrical container filled with 15 ounces of WP and fitted with detonating fuze M206A1 or M206A2. The body of the grenade is an 18-gage (.05-inch) sheet steel cylinder 2⅜ inches in diameter and 4.5 inches high. The body of grenade M15 is made thicker than the bodies of the other smoke grenades. The grenade body has no smoke-emission holes, since grenade M15 functions by bursting, detonating fuzes M206A1 and M206A2 are also used in high explosive grenades and are similar to igniting fuze M201A1 (fig. 2–9). The M206A1 and M206A2 have a high-explosive burster instead of an igniter as does the M201A1. The fuze is screwed into an adapter in the top of the grenade. A threaded fuze well in the center of the grenade receives the fuze.

(2) *Data.*

Model number	M15
Type	Smoke (bursting)
Weight	31 ounces
Dimensions:	
Diameter	2⅜ inches
Height	4.5 inches
Charge	15 ounces WP
Body	Sheet-steel
Fuze	M206A1
Type	Delay detonating
Delay time	4-5 seconds

c. Functioning. Grenade M15 functions as outlined in paragraph 2–4*c*.

***Warning 1:* Observe the precautions given in paragraph 2–8b(7).**

***Warning 2:* The WP hand grenade M15 is a dangerous, bursting-type munition. The white phosphorous filling not only causes a dense white smoke but also causes burns and fires. When the grenade bursts, particles of WP are scattered over the area and ignite spontaneously on contact with the air. For safety reasons, the WP hand grenade M15 must be thrown at a distance of over 35 meters from all personnel during training.**

d. Disarming. This grenade is not disarmed (para. 2–4*f*). Misfired grenades should not be approached or retrieved; they should be destroyed by authorized disposal personnel (para 2–8*c*).

e. Capabilities. The average soldier can throw grenade M15 approximately 25 meters. The effective casualty radius is 15 meters, but pieces of phosphorous may be thrown as far as 30 meters. The phosphorous will burn for about 60 seconds, igniting any flammable substance with which it comes into contact. See also paragraph 1–6*c*(5).

2–15. Grenade, Hand: Colored Smoke (Red, Green, Yellow or Violet) M18

a. General. Grenade M18 (fig. 2–19) is a colored smoke grenade used for ground-to-air or ground-to-ground signaling. This grenade is issued in four colors of smoke: red, green, yellow, or violet. The violet smoke is used only for training.

b. Description.

(1) *General.* The colored smoke grenade M18 is a cylindrical container filled with 11½ ounces of either red, green, yellow, or violet smoke mixture and fitted with an igniting fuze M201A1. The body of the grenade is a thin-sheet-metal cylinder 2.5 inches in diameter and 4.5 inches high, with 6 smoke emission holes in the top and 1 in the bottom. Fuze M201A1 is screwed into an adapter in the top of the grenade. A tapered hole in the filling is lined with starter mixture. The top of the filling is also covered with starter mixture. The smoke-emission holes are covered with pressure-sensitive tape to protect the filling from moisture.

(2) *Data.*

Model number	M18
Type	Colored smoke (red, green, yellow, or violet)

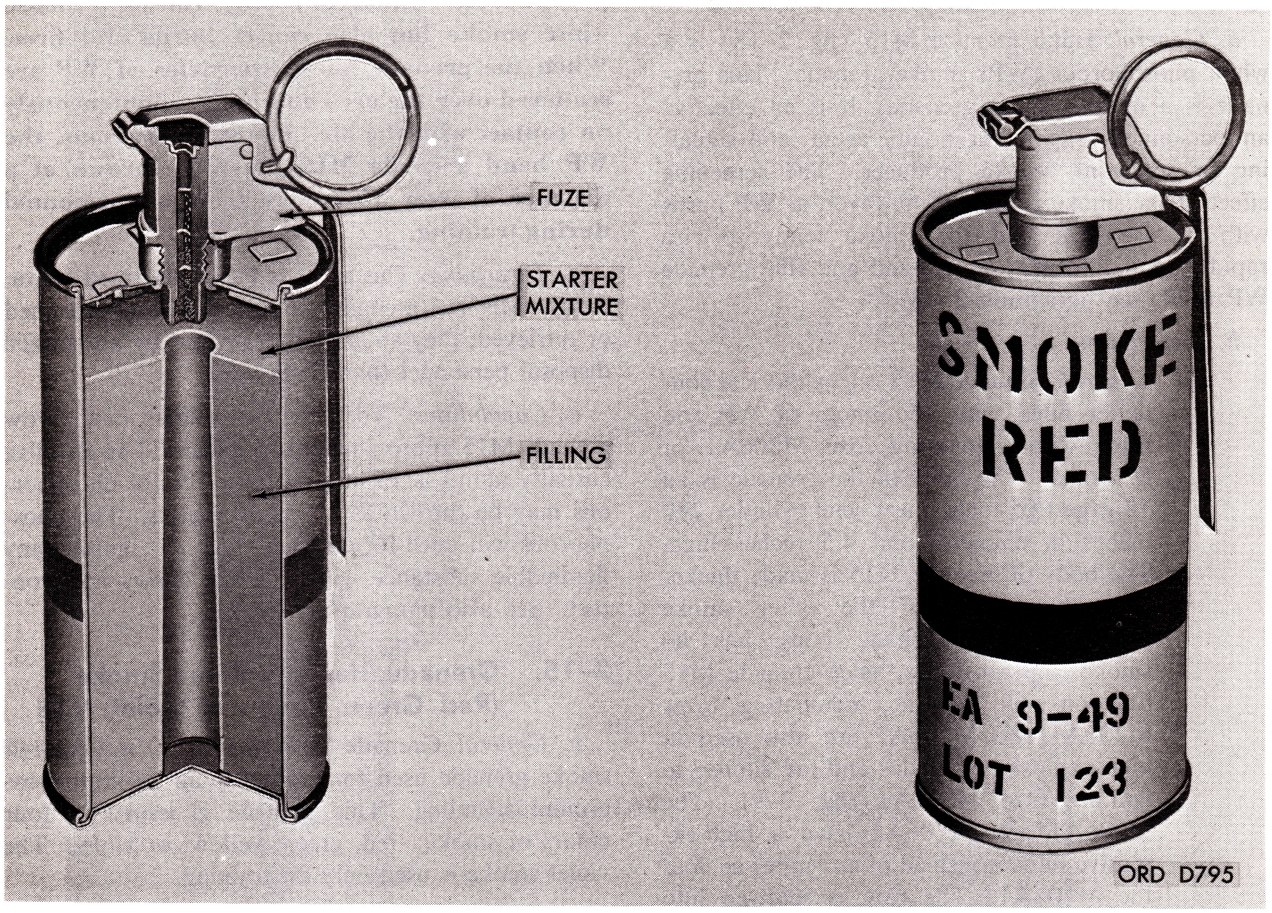


Figure 2–19. Grenade, hand: red smoke M18, w/fuze, M201A1.

Weight	19–ounces
Charge	11½–ounces smoke mixture
Dimensions:	
Diameter	2.5 inches
Height (without adapter)	4.5 inches
Body	Sheet-metal
Fuze	M201A1, 1.2- to 2-second delay
Type	Delay igniting
Delay time	1.2 to 2 seconds

c. Functioning. Grenade M18 functions in the same manner as grenade M6 (para. 2–9).

d. Disarming. Grenade M18 is not disarmed (para. 2–4*f*).

e. Capabilities. Grenade M18 may be launched from a rifle by use of grenade projection adapter M2A1. Grenade M18 emits smoke for 50- to 90-seconds.

2–16. Grenade, Hand: CN1, ABC–M25A1 and ABC–M25A2

a. General. CN1 grenade M25A1 and M25A2 (fig. 2–20) are special-purpose, bursting-type munitions used for the control of riots and for training purposes. The grenades are filled with CN–1 (chloracetophenone) which causes irritation and watering of the eyes, resulting in temporary, partial, or total blindness.

b. Description.

(1) *General.* These grenades are spherical, with a diameter slightly less than 3 inches. The body is made of two plastic hemispheres cemented together. An upper half-sleeve and a lower half-sleeve are molded parts of the two plastic hemispheres. The half-sleeves together form a burster well and

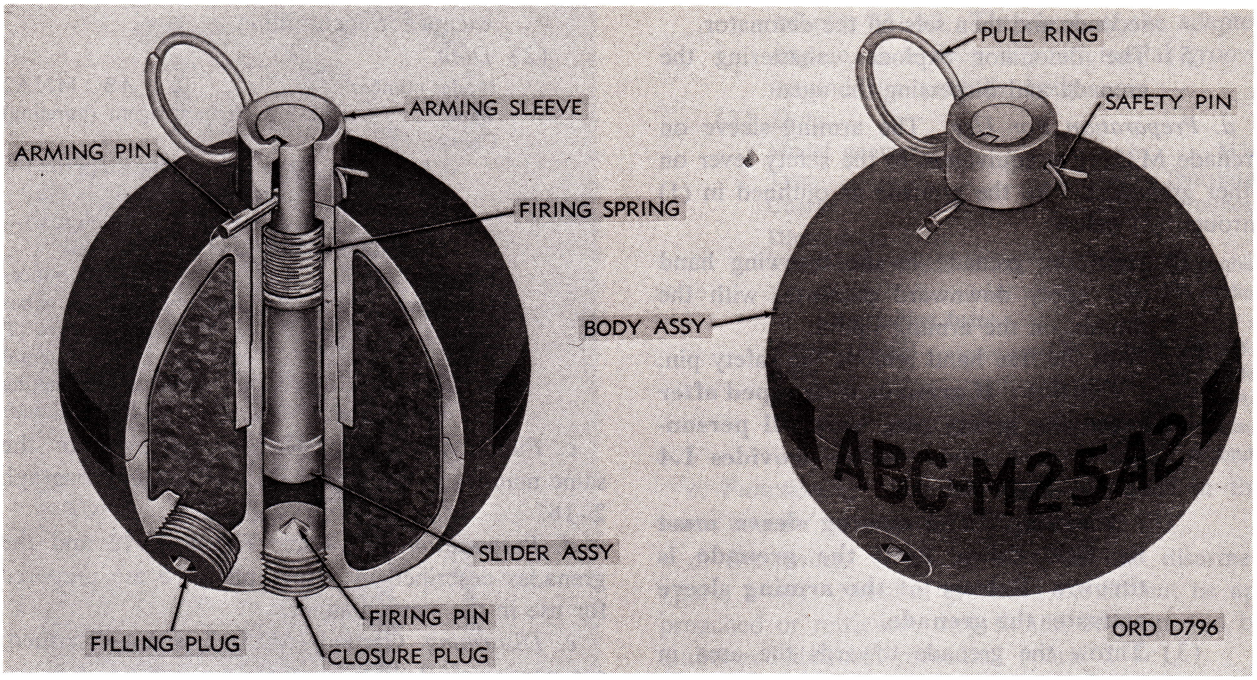


Figure 2–20. Grenade, hand: riot, CN1, ABC–M25A1, w/integral fuze.

slider housing. A closure plug with integral firing pin is screwed into the bottom of the burster well; a filling plug is screwed into the filling hole at the bottom of the grenade. A detonator type fuze with a delay of 2 seconds (approx.) is installed in the fuze well.

(2) *Data.*

Model number	ABC M25A1 or ABC M25A2
Type	Irritant agent (bursting)
Charge	90 grams (3.2 ounces approx.) (mixture of CN1 and silica aerogel)
Weight	7.5 ounces
Dimensions	Diameter, 2.96 inches
Body	Plastic hemispheres (2)
Fuse	Integral
Type	Delay detonating
Delay time	1.4 to 3 seconds

c. Functioning. A detonator, with a delay of approximately 2 seconds, is integrally contained in a slider. The slider travels from top to bottom of the burster well to impact the firing pin. The slider is driven against the firing pin by action of a firing spring. A ball-shaped end of a retainer pin is seated in a recess in the top of the slider. The retainer pin remains perpendicular to the slider as long as the slider is held in place by the safety pin, which passes through the upper end of the slider and through the arming sleeve. In this position, the retainer pin prevents movement of the slider through the firing spring. When the safety pin is withdrawn and the grenade is thrown, pressure is removed from the top of the arming sleeve, and the sleeve is forced from the end of the slider. With the arming sleeve removed, pressure of the firing spring causes the retainer pin to pivot in its recess through a 90° angle so that the pin lies against the body of the slider in a channel. In this position, the slider and retainer pin are free to pass through the middle of the firing spring as the spring forces the slider downward to impact against the firing pin. Upon firing, the grenade functions as outlined in (1) through (5) below:

(1) When the grenade is thrown, the arming sleeve is forced from the end of the slider.
(2) Under pressure of the firing spring, the slider moves toward the bottom of the burster well.
(3) The primer in the end of the slider strikes the firing pin and ignites a delay element in the slider.

(4) The delay element burns for 1.4 to 3 seconds and then sets off the detonator.

(5) The detonator explodes, shattering the grenade and dispersing the agent.

d. Preparation For Use. The arming sleeve on grenade M25A1 is equivalent to the safety lever on other grenades: Fire the grenade as outlined in (1) through (3) below:

(1) Hold the grenade in the throwing hand and apply downward pressure, with the thumb, on the arming sleeve.

(2) With the free hand remove the safety pin.

Caution: **If grenade is dropped after removing safety pin, warn all personnel to seek cover. Delay provides 1.4 to 3 seconds only.**

Warning: **The arming sleeve must be held down until the grenade is thrown. Release of the arming sleeve activates the grenade.**

(3) Throw the grenade towards the area in which the agent is to be dispersed.

Warning: **Personnel using CN1 grenades ABC M25A1 and ABC M25A2 should wear protective masks.**

e. Disarming. Once the safety pin has been removed, the grenade must be thrown. Do not attempt to disarm the grenade; see paragraph 2–4*f*. Misfired grenades may be returned after 5 minutes as explained in paragraph 2–8*c*.

f. Capabilities. The irritant agent given off by these grenades causes watering of the eyes. The radius of burst (visible cloud agent) is approximately 5 meters, but fragments of the plastic grenade occasionally fly as far as 25 meters. Effective quantities of agent may be carried as far as 70 to 95 meters downwind. The average soldier can throw the grenade approximately 50 meters.

2–17. Grenade, Hand: Riot, CS1 or DM1, ABC–M25A2

a. General. These grenades are bursting-type munitions used to control riots. Grenades M25A2 identical in construction and functioning, differ only in their fillings. CS1 is an irritant which effects the eyes, nose, and throat; DM1 is a vomiting agent which also produces a secondary effect on the eyes.

b. Description.

(1) *General.* Grenades ABC M25A2 and those described in paragraph 2–16 are identical, except for agent filling.

(2) *Data.*

Model number	ABC M25A2
Type	Irritant agent (bursting)
Charge:	
CS1	55 grams (2 ounces approx.)—(mixture CS1 and silica aerogel)
DM1	65 grams (2.3 ounces approx.)—(mixture of DM1 and silica aerogel)
Weight	8 ounces
Dimension	Diameter, 2.96 inches
Body	Plastic hemispheres (2)
Fuze	Integral
Type	Delay detonating
Delay time	1.4 to 3 seconds

c. Functioning. The M25A2 functions in the same manner as the grenades described in paragraph 2–16.

d. Preparation For Use. The M25A2 and the grenades described in paragraph 2–16 are prepared for use in the same manner.

e. Disarming. Grenade M25A2 is not disarmed; see paragraph 2–16*e*.

f. Capabilities. The same as for the grenades described in paragraph 2–16*e*.

2–18. Grenade, Hand and Rifle: Smoke, WP, M34

a. General. Grenade M34 (fig. 2–21) is a bursting-type, multi-purpose munition used as an antipersonnel, incendiary, or smoke-producing device.

b. Description.

(1) *General.* The WP smoke grenade M34 is a cylindrical steel container filled with WP (white phosphorous) and fitted with detonating fuze M206A2. Fuze M206A2 is also used in WP grenade M15 (para. 2–14). An asbestos gasket provides a seal for the joint between the fuze well and the fuze. A safety pin, with a pull ring attached, holds the safety lever in the safe position. The fuzed grenade weighs approximately 1½ pounds, is 2⅜ inches in diameter and 5½ inches long. The body of the grenade is made of 18-gage (.05-inch) steel and is scored with grooves to assure uniform breakup of the case. A fuze well in the center of the grenade is threaded to receive the fuze, which incorporates a bursting charge. The body is tapered at the bottom so that the grenade

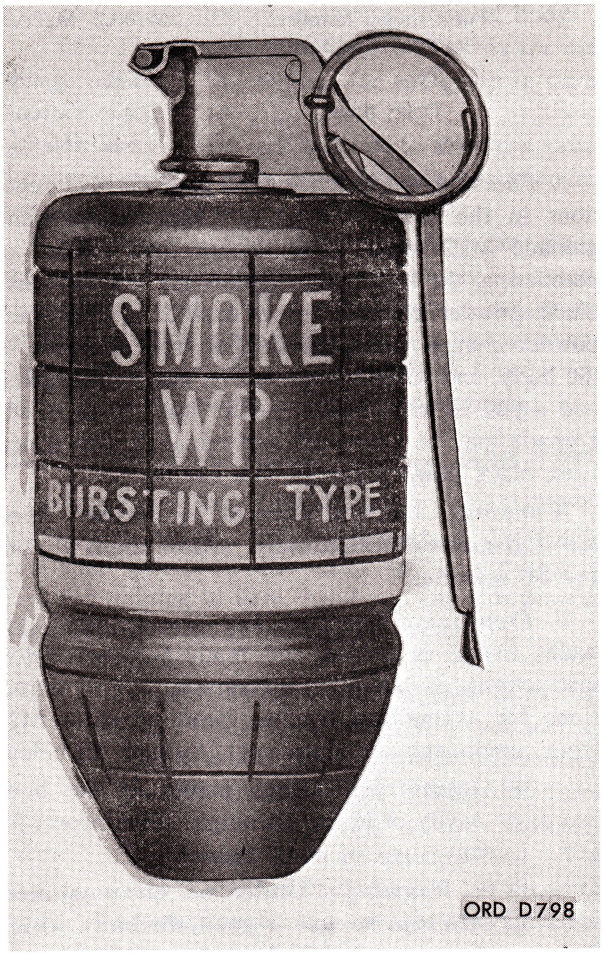


Figure 2–21. Grenade, hand and rifle: smoke, WP, M34, w/fuze, M206A2.

can be mounted on a grenade projection adapter M1A2. The claws of the adapter engage in a deep circumferential groove around the grenade body.

(2) *Data.*

Model number	M34
Type	Smoke (bursting)
Charge	(WP) 15 ounces
Dimensions:	
Diameter	2⅜ inches
Height (including fuze)	5½ inches
Weight (fuzed)	1½ pounds (approx.)
Body	Steel
Fuze	M206A2
Type	Delay detonating
Delay time	4 to 5 seconds

c. Functioning. Grenade M34 functions in the same manner as grenade M15 (para. 2–14).

d. Disarming. Grenade M34 is not disarmed (para. 2–4*f*). Misfired grenades should not be approached or retrieved; they should be destroyed by authorized disposal personnel (para. 2–8*c*).

e. Capabilities. The average soldier can throw grenade M34 approximately 35 meters. This grenade, upon bursting, scatters WP particles over a 35-meter radius. The body breaks up into uniform fragments which may be projected up to 35 meters from the point of burst. The white phosphorous will burn for approximately 60 seconds, igniting any flammable substance with which it comes into contact. See also paragraph 1–6*c*(5). Use of a rifle and grenade projection adapter M1A2 for launching extends the range of the grenade to approximately 120 meters.

Section V. PRACTICE AND TRAINING HAND GRENADES

2–19. General

a. Description. Practice and training hand grenades are used for training personnel in care, handling, and use of hand grenades, prior to use of service hand grenades. Practice hand grenades simulate functioning of service hand grenade to provide realism in training. Training hand grenades are completely inert and do not function in any way. They are used only for training personnel in handling and throwing of hand grenades. Two live types of practice and one inert training type of hand grenades are available: the M21, which simulates functioning of fragmentation hand grenade Mk2 (para 2–4); the M30, which simulates functioning of fragmentation hand grenade M26 series (para. 2–5); and training hand grenade Mk1A1, which simulates fragmentation hand grenade Mk2 (para. 2–4). In handling and using practice and training hand grenades all precautions and procedures outlined in paragraphs 2–3, 2–4, and 2–5 *must be followed.*

b. Precautions. Precautions listed for service hand grenades apply to handling and throwing practice and training hand grenades.

2–20. Grenade, Hand: Practice, M21

a. General. Practice hand grenade M21 simulates, in appearance, weight and functioning, fragmentation hand grenade Mk2 (para. 2–4). It is used for training in care, handling, and throwing of fragmentation hand grenade Mk2.

b. Description.

(1) *General.* Practice hand grenade M21, similar in external appearance to fragmentation hand grenades, consists of a body, a low explosive charge, and a delay igniting fuze. The body, which has the same appearance as fragmentation hand grenade Mk2, is open at both ends. A small black powder charge in a cloth bag is inserted in the opening in the base of the body. A stopper, issued with the charge, closes the opening. Opposite this opening is a smaller threaded opening into which the fuze is installed. Practice hand grenade M21 is available completely assembled and ready for use. It is also available as a separately issued body, practice charge, and practice fuze, which are assembled in the field prior to use. After use, the body of the hand grenade may be recovered and reused by installing a new fuze, charge, and stopper. Four practice hand grenade fuzes are available: M10A2, M10A3, M205A1, and M205A2. Functionally the same, these four practice hand grenade fuzes differ only in such physical details as shape of body, shape of handle, and loading. These practice hand grenade fuzes are identical to the detonating fuzes used in service hand grenade except for the loading of the tube crimped to the body of the fuze. In practice hand grenade fuzes, the tube contains a low explosive, instead of a high explosive.

(2) *Data.*

Model number	M21
Type	Practice
Weight (assembled)	21 ounces
Explosive charge	21 grains of black powder
Dimensions:	
Length	4.5 inches
Diameter	2.25 inches
Body	Cast iron
Fuze: model number	M10A2, M10A3, M205A1, or M205A2
Type	Delay igniting
Delay time	4 to 5 seconds
Color	See table 1–1

c. Functioning. Practice hand grenade M21 functions in the same manner as fragmentation hand grenade Mk2 (para. 2–4), except that, instead of detonating, the fuze igniter ignites the low explosive black powder charge. Upon exploding, the black powder charge forces the stopper from the base of the body, and emits a loud report, like a firecracker, and a puff of white smoke. After use, the expended grenade may be recovered and reloaded with a new fuze, black powder charge, and stopper.

***Warning:* Do not attempt to recover fired hand grenades immediately. Allow them to cool for 30 minutes.**

d. Preparation For Use. For practice hand grenades issued assembled and ready for use, follow instructions contained in paragraph 2–4. Instructions for assembling practice hand grenades M21 from components are given in (1) through (6) below:

(1) Inspect for foreign matter in the body cavity or in the openings. Also inspect for any signs of metal failure.

***Warning:* Under no circumstances attempt to use a grenade body which has any signs of cracks, or weakness. Never attempt to reinforce the standard practice charge by adding or substituting other explosives.**

(2) Inspect igniting fuze for deformation, cracks, and corrosion.

***Warning:* Never attempt to use a detonating fuze with a practice hand grenade.**

(3) Holding the fuze in one hand with the igniter up, screw the body into the fuze.

(4) Carefully insert one practice hand grenade charge in body through opening in bottom.

***Warning:* Do not insert more than one practice charge into the grenade. Do not substitute any other explosive for the authorized practice charge. Unauthorized substitutions and improvisions are strictly prohibited by the U.S. Army Materiel Command.**

(5) Insert stopper in hole in base of body.
(6) The practice grenade is now ready for use. Follow instructions for use given in paragraph 2–4.

e. Disarming. Do not attempt to disarm a practice hand grenade once the safety pin has been removed (para. 2–4*f*).

f. Capabilities. The average soldier can throw practice hand grenade M21 approximately 30 meters. Upon functioning, the grenade emits a report resembling that of a firecracker, and a puff of white smoke. This grenade may be launched from a rifle in the same manner as its service counterpart.

2–21. Grenade, Hand: Practice, M30 (T39)

a. General. Practice hand grenade M30 simulates appearance, weight, and functioning of fragmentation hand grenades M26-series (para. 2–5). It is used for training in care, handling, and throwing of fragmentation hand grenades M26-series.

b. Description.

(1) *General.* Practice hand grenade M30 (fig. 2–22) is similar in external appearance to fragmentation hand grenades M26-series. Practice grenade M30 consists of three basic parts: a body, a low explosive charge, and a delay igniting fuze. The body is made of cast iron and has the same external appearance as that of fragmentation grenades M26-series. Internal construction of this grenade is similar to practice hand grenade M21 (para. 2–20). This grenade is prepared for use and reuse in the same manner as practice hand grenade M21.

(2) *Data.*

Model number	M30
Type	Practice
Weight (assembled)	16 ounces
Explosive charge	21 grains of black powder
Dimensions:	
Length	3.9 inches
Diameter	2.25 inches
Body	Cast iron
Fuze: model number	M10A2, M10A3, M205A1, or M205A2
Type	Delay igniting
Delay time	4 to 5 seconds
Color	See table 1–1

c. Functioning. Practice hand grenade M30 functions in the same manner as fragmentation hand grenades M26-series (para. 2–5), except that, instead of detonating, the fuze igniter ignites the low explosive black powder charge. Upon exploding, the black powder charge forces the stopper from the base of the body, emits a loud report, (like a firecracker) and a puff of white smoke. After use, the expended grenade may be recovered and reloaded with a new fuze, black powder, and stopper.

Warning: **Do not attempt to recover fired practice hand grenade immediately. Allow them to cool for 30 minutes.**

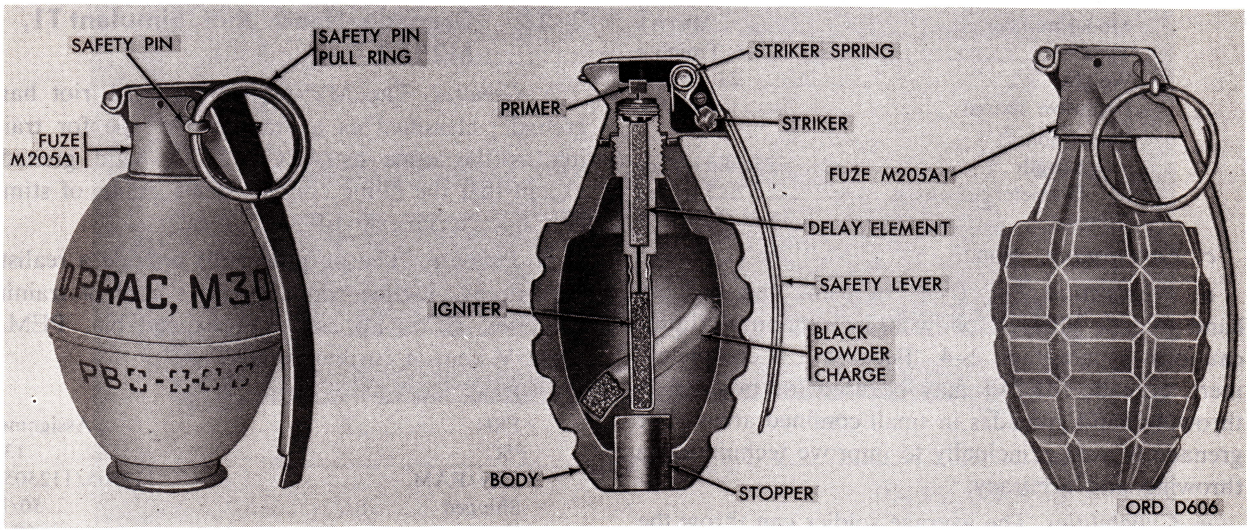


Figure 2–22. Grenade, hand: practice, M30, with fuze, M205A1.

d. Preparation For Use. For practice hand grenades issued assembled and ready for use, follow instructions contained in paragraph 2–5. Instructions for assembling practice hand grenades M30 from components are given in paragraph 2–20*d*. The grenade is now ready for use; follow instructions in paragraph 2–5.

e. Disarming. Do not attempt to disarm a practice hand grenade once the safety pin has been removed, except as a training exercise.

f. Capabilities. The average soldier can throw practice hand grenade M30 approximately 40 meters. Upon functioning, the grenade emits a report resembling that of a firecracker, and a puff of white smoke. This grenade may be launched from a rifle in the same manner as its service counterpart.

2–22. Grenade, Hand: Training, MkA1

a. General. Training hand grenade Mk1A1 (fig. 2–23) simulates in weight and form, fragmentation hand grenade Mk2 (para. 2–4). The grenade is a nonfunctioning type and is used for training in handling and throwing of fragmentation hand grenade Mk2.

b. Description.

(1) *General.* Training hand grenade Mk1A1 consists of only two parts: a casting which simulates body and fuze of fragmentation hand grenade Mk2, and a pull ring with cotter pin attached.

(2) *Data.*

Model number	Mk1A1
Type	Training
Weight	21 ounces
Explosive charge	None
Dimensions:	
Length	4.5 inches
Diameter	2.25 inches
Color	See table 1–1

c. Functioning. None.

d. Preparation For Use. In using the training hand grenade Mk1A1 follow all instructions and precautions in paragraph 2–4. Because it is completely inert, grenade Mk1A1 may be used for practice in throwing hand grenades in small confined areas. The grenade is used principally to improve techniques in throwing and accuracy.

e. Capabilities. The average soldier can throw the training hand grenade Mk1A1 approximately 30 meters.

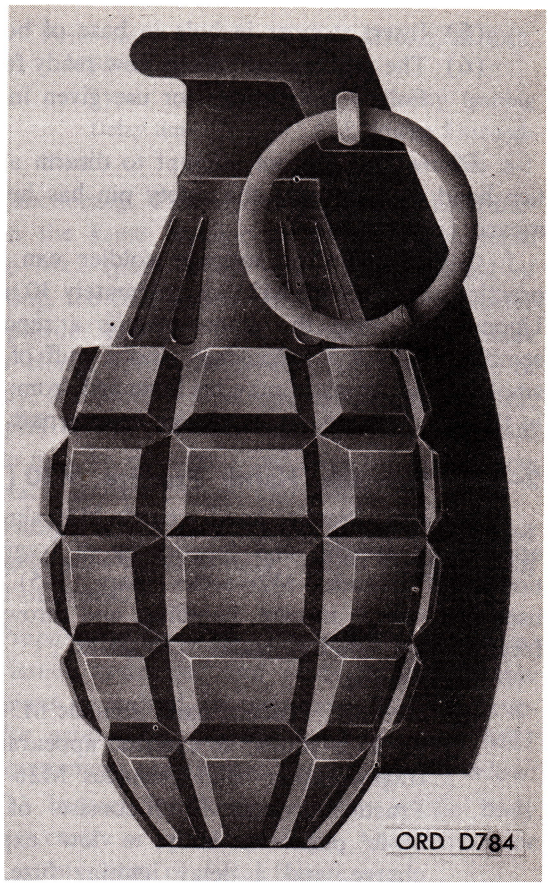


Figure 2–23. Grenade, hand: training, Mk1A1.

2–23. Grenade, Hand: Riot, Simulant T1, M25A2

a. General. The M25A2 simulant T1 riot hand grenade, classified as a Standard-A type for training, is the same as ABC-M25A2 hand grenade, except that the filling consists of 95 grams of stimulant talc, technical, T1.

b. Purpose. The purpose is to provide a realistic nonirritant practice round for riot control training exercises. It is an essential, expendable, PEMA, Class V item of current supply.

c. Data.

FSN	Assignment
FSC	1330
LIN/EAM	112505/11250510
Shipped	50/bx.
Weight	50 lb.
Cubage	1.8 cu. ft.
Marking	Blue body with black letters

Section VI. OFFENSIVE HAND GRENADE

2–24. General

Service hand grenades are classified according to use as fragmentation, chemical (burning or bursting), and offensive. Offensive hand grenades are used as blasting or demolition agents. Since fragments may be projected over 200 yards, offensive hand grenades will not be used in training without adequate cover. Offensive hand grenades are shipped (24 or 50 per wooden box) and issued unfuzed. Since fuzed offensive hand grenades accidentally detonated en masse could detonate nearby ammunition, quantities fuzed by the user are determined by immediate needs.

2–25. Offensive Hand Grenade Mk3A2

a. Description. The Mk3A2 (fig. 2–24) is the standard offensive hand grenade. It is about the same size as the fragmentation hand grenade, but has a cylindrical body made of pressed fiber. The complete grenade weighs approximately 15.6 ounces and contains about 8 ounces of flaked TNT as its filler. It is used with the "silent" type fuze M206A2. The shape of the safety lever of the fuze, slightly different from that of a fragmentation grenade, conforms with the different shape of the body of the grenade. Although the grenade is black, it has yellow markings on the outside to show that it has a high explosive filler.

b. Data.

Grenade	Grenade, hand, offensive Mk3A2
Body	Asphalt impregnated fiber
Filler	Flaked TNT (8 ounces)
Fuze	Detonating M206A2
Delay (seconds)	4 to 5 (Avg. 4.5)
Color & markings	Black, yellow band
Size of complete grenade (centimeters)	
Length	13.4
Diameter	5.4
Weight of complete grenade (ounces)	15.6
Range (avg. throwing distance) (meters)	40
Use	Concussion (blast, demolition, and casualty)
Effective casualty radius (meters)	2

c. Functioning. When the detonator causes the TNT filler to explode, the force of the explosion is dissipated mainly in the form of shock waves, rather than in fragments, although metal portions of the fuze assembly can cause casualties.

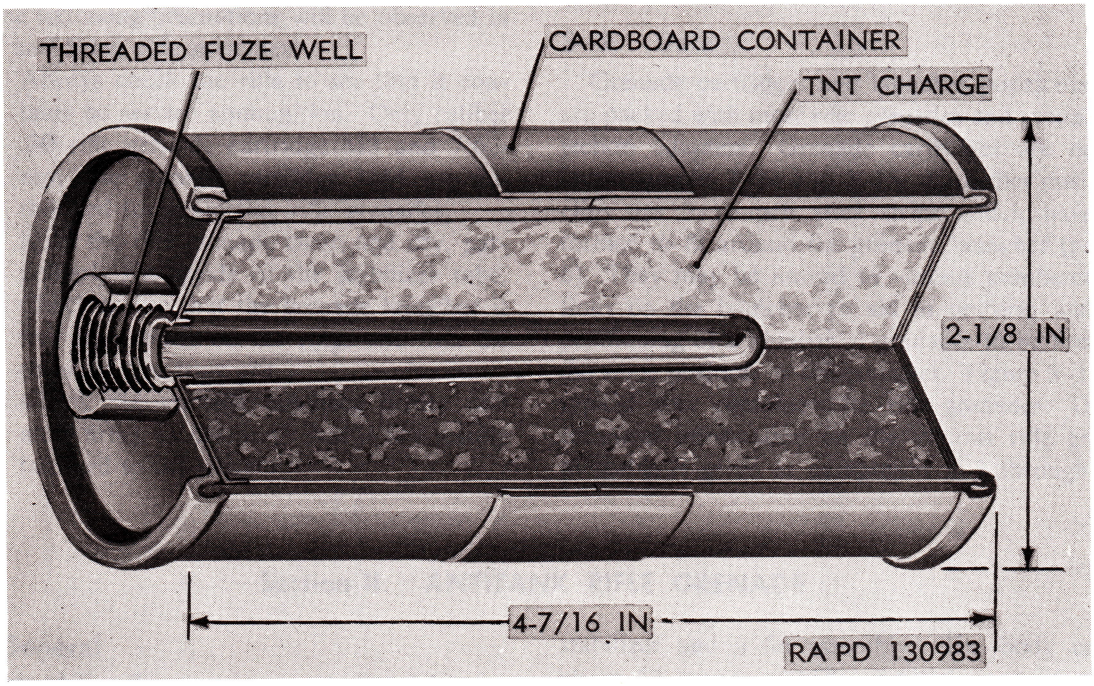


Figure 2–24. Mk3A2 offensive hand grenade.

d. Uses. Offensive grenades are used to produce casualties on enemy personnel, with a minimum of casualties among friendly troops. Attacking troops can use these grenades effectively in final assaults Offensive grenades, which can also be used as half-pound demolition charges to destroy equipment, cut trees, etc., are especially useful in developed areas and against such fortified positions as caves and bunkers.

e. Capabilities. The average soldier can throw this grenade approximately 40 meters. The effective casualty radius in open terrain is approximately 2 meters, but inside a closed room, cave, or bunker, it is much greater.

CHAPTER 3

RIFLE GRENADES

Section I. INTRODUCTION

3–1. General

a. Description. Rifle grenades (fig. 1–1) are fin stablized projectiles designed to be projected from a launcher attached to the end of a rifle (fig. 4–6). The propelling force for the grenade is provided by a special gas-producing grenade cartridge (fig. 3–9) which is loaded into the rifle chamber. Rifle grenades are used as antiarmor weapons, as antipersonnel weapons, for screening or signaling, or for incendiary effect against flammable targets. The types of rifle grenades currently available are high-explosive antitank (HEAT), smoke, and practice. For detailed information on tactical employment of rifle grenades, see FM 23–30.

b. Precautions In Use. In addition to precautions in paragraph 1–6 and in TM 9–1300–206 and FM 23–30, the following precautions will be observed in handling and firing rifle grenades:

(1) Always check the rifle to see that it contains no service ammunition. Only caliber .30 rifle grenade cartridge M3 and 7.62-mm rifle grenade cartridge M64 are authorized for projecting rifle grenades.
(2) Keep the rifle grenade clean and dry, particularly the inside of the stabilizer tube.
(3) Check to see that the grenade launcher is free from burrs on the rings and that the rings are free from grit.
(4) Check the grenade launcher before and after firing to detemine that it is securely fastened to the weapon.
(5) Never place a rifle grenade on the launcher unless it will be fired immediately.
(6) Do not fire high-explosive grenades from launcher equipped with a circular-type grenade retainer spring.
(7) Normally, grenades are prevented from faling off the launcher by the grenade retainer spring; however, when firing at a minus angle of elevation, lower rifle gently to prevent the weight of the grenade from causing it to slip from the launcher.
(8) Do not handle duds, since they are extremely dangerous. Report location of duds for disposal by specially trained ammunition personnel.

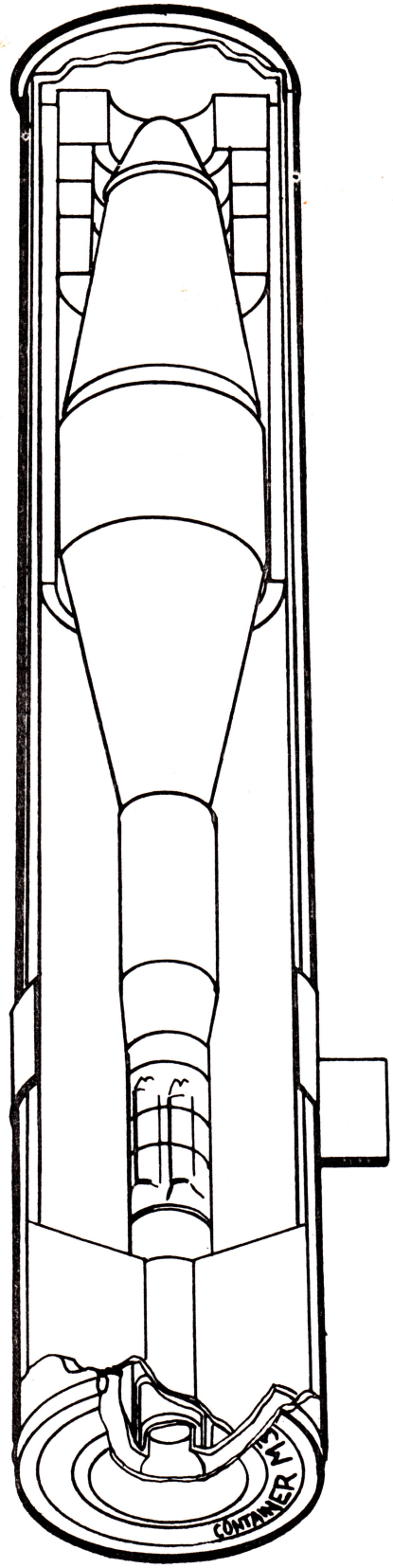
3–2. Data

Grenade cartridges and launcher positioning clips are packed with most rifle grenades and grenade projection adapters. Grenade cartridges are descibed in paragraphs 3–14 and 3–15. Launcher positioning clips are 5/16-inch steel strips which have been formed to fit around the grenade launcher (para. 4–6). They may be moved to various numbered positions on the launcher to aid in uniform and rapid positioning of a number of grenades to be fired from the same position on the launcher. Figure 3–1 shows typical fiber containers for rifle grenades. Detailed technical information on the various rifle grenades available is given in paragraphs 3–3 through 3–10.

Section II. ANTITANK RIFLE GRENADE

3–3. General

Antitank (AT) rifle grenades are designed for use against armored targets. The high-explosive antitank rifle grenade consists of a body assembly, a stabilizer and a fin assembly. The body contains about 12 ounces of high explosive in the form of a shaped charge, and a base detonator. Antitank rifle grenades produce a penetrating effect against targets



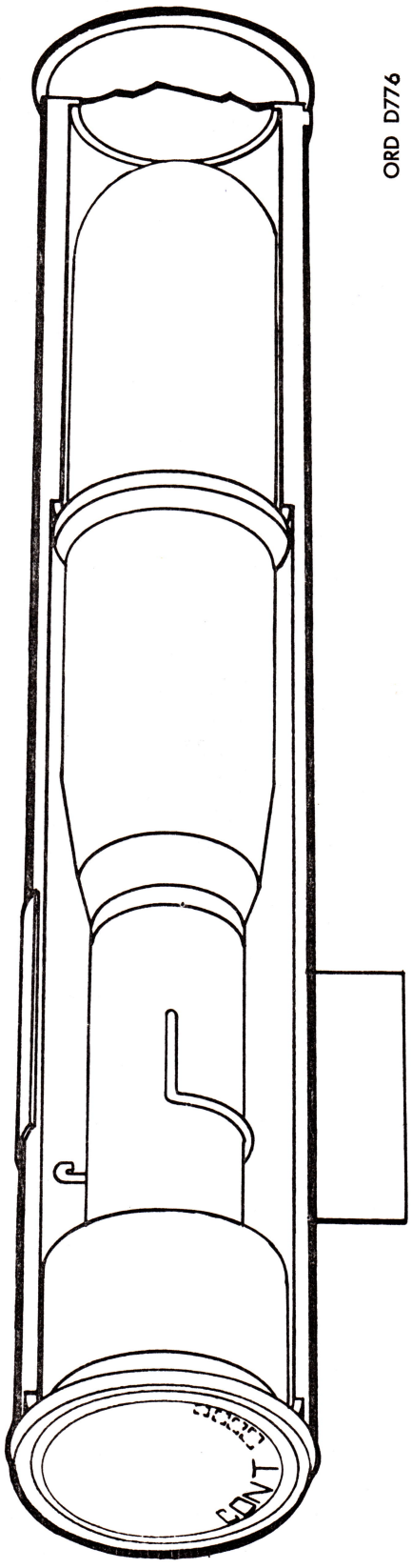


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Figure 3–1. Typical fiber containers for rifle grenades.

by means of a shaped charge. The shaped charge in an antitank grenade is an explosive charge molded around a conical metal cavity liner (see cross sectional view in fig. 3–2). Detonation of the charge travels from the detonator to the cavity where the detonation wave is "focused" to produce a very high velocity jet of hot gases and metal which will blast deep holes into or through steel, concrete and similar material. In addition, a slug of metal acting as a projectile will be projected into or through the hole. This penetrating effect of shaped charges is called "Munroe effect." For detailed information on the "Munroe effect" see TM 9–1910. Antitank rifle grenades are fired from a rifle fitted with a grenade launcher (para. 4–6) using a grenade cartridge (paras. 3–14 and 3–15).

3–4. Grenade, Rifle: HE, AT, M31, with Fuze, Grenade, Rifle, M211

a. General. This rifle grenade (fig. 3–4) is a fin-stabilized, point-initiated, base-fuzed, high-explosive, antitank grenade. The grenade employs a shaped charge of high explosive for the defeat of armor plate or concrete, and is effective against targets at all angles of obliquity up to 65°. The grenade uses a piezoelectric assembly (Lucky) which generates an electric current by being squeezed on impact with the target. This action initiates the explosive train.

Note. Some rifle grenades are assembled with modified nose assemblies. The modified nose assembly has a positive ground between the piezoelectric crystal and the metal nose protector cap.

b. Description.

(1) *General.* Rifle grenade M31 consists of three basic parts: the body, the fuze, and the stabilizer.

(*a*) *Body.* Grenade M31 has a cylindrical steel body with conical ogive and conical rear section. The ogive contains a piezoelectric (LUCKY) assembly in the nose. A lead wire (in conduit) connects this assembly to the fuze, in the base of the body. The body contains COMP B molded against a steel shaped charge liner. A booster is contained in the base of the body.

(*b*) *Fuze.* Fuze M211 is an electric detonating fuze which consists of a base, spring-driven contact, and a detonator rotor. The detonator rotor contains an electric detonator, a setback leaf assembly, and a booster pellet.

(*c*) *Stabilizer.* The aluminum stabilizer consists of a stabilizer tube, with an adapter at its forward end for connection to the body, and a fin assembly at the other end. When assembled, the fuze is held within the adapter.

(2) *Data.*

Model number	M31
Type	High explosive antitank rifle grenade
Weight (as issued)	1.56 pounds
Explosive charge	9.92 ounces of COMP B
Dimensions:	
Length	16.96 inches
Diameter	2.61 inches
Body	Steel
Fuze: Model number	M211
Type	Point (electric) initiating base detonating
Color	See table 1–1

c. Functioning. When the rifle grenade is fired, an inertia-actuated setback leaf assembly delays alinement of the detonator with the booster in the grenade until a safe distance is reached. When the grenade strikes its target, a piezoelectric (LUCKY) crystal in the nose is stressed, thereby generating an electrical impulse. The electrical impulse is conducted to the detonator and initiates the explosive train of the grenade. Fuze M211 is held in the adapter of the stabilizer tube. Prior to arming, the detonating circuit within the fuze is grounded, thus, induced currents cannot pass through the detonating circuit and current from an accidentally stressed LUCKY crystal is short circuited to the body of the grenade. The detonating switch is contained within a small rotor which is locked into the short-circuit position by a setback leaf assembly. When the grenade is fired, the setback leaf assembly releases the rotor which turns 90°, opening the shorting switch and closing the firing switch. Upon firing ((1) through (4) below), the grenade functions as outlined in (5) through (9) below.

(1) Inertia setback causes the first of the three setback leaves in the setback leaf assembly to overcome the tension of its spring, releasing setback leaf number 2.

(2) Setback leaf number 2 rotates, releasing setback leaf number 3.

(3) Setback leaf number 3 rotates, releasing a rotor assembly containing the ring circuit.

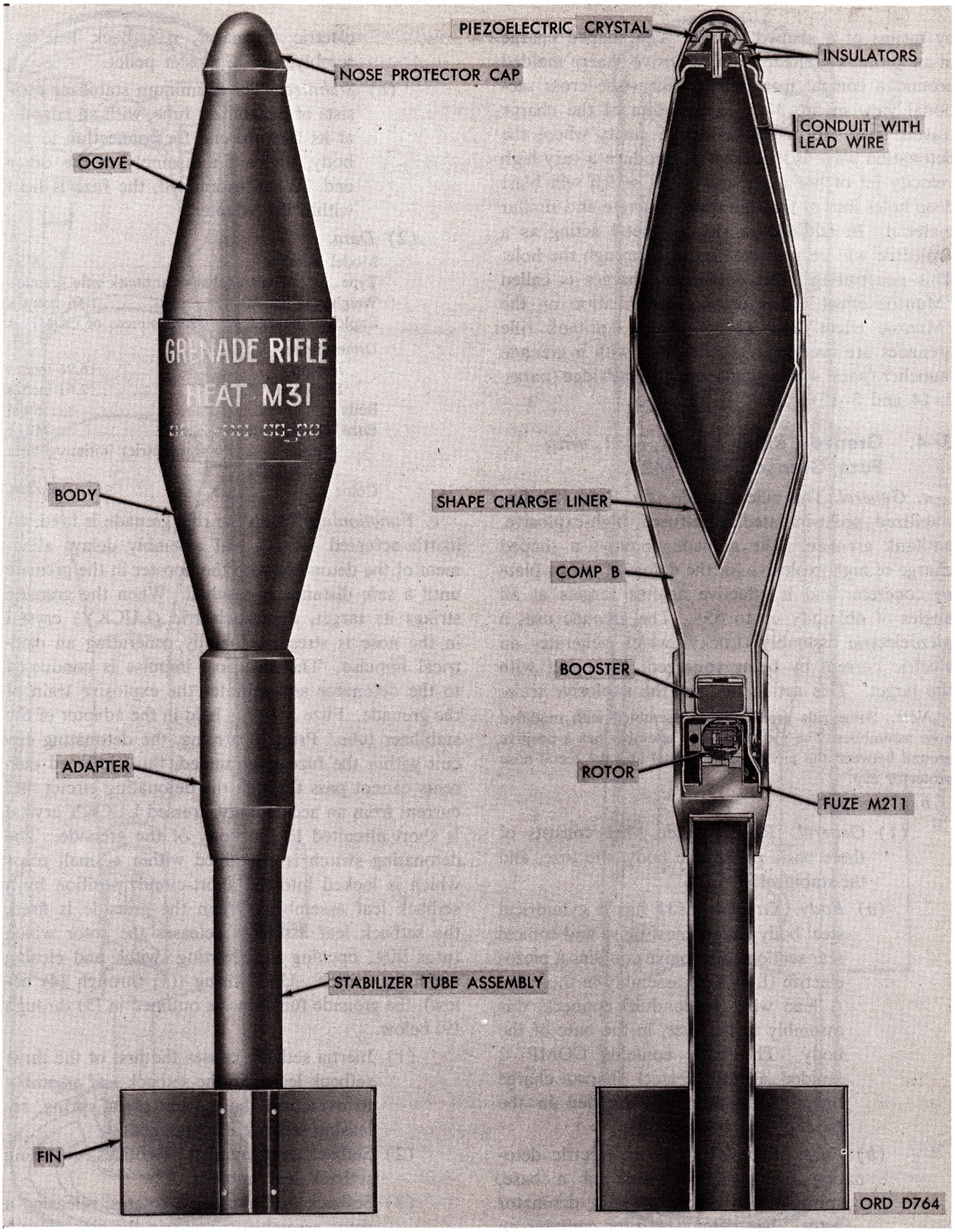

Figure 3–2. Grenade, rifle: HE, AT, M31 w/fuze M211.

(4) The rotor assembly turns 90° to close the firing circuit, thus arming the grenade.
(5) Upon impact with the target, the LUCKY is stressed and generates an electrical impulse.
(6) The electrical impulse is conducted through a lead wire in the conduit to the electric fuze.
(7) The electrical impulse passes through a resistance wire in the detonator, initiating the explosive train.
(8) The detonator detonates the booster and, in turn, the shaped charge.
(9) The principal explosive force of the shaped charge is directed forward to penetrate the target.

d. Preparation for Use. In preparing rifle grenade M31 for use, proceed as outlined below and refer to paragraph 3–1*b*.

(1) Check the rifle grenade launcher to make sure the rings are free of burrs and grit.
(2) Make sure that the launcher is secure to the rifle. See FM 23–30 for instructions on installing and using grenade launcher.
(3) Inspect grenade carefully. Check nose protector cap to see that it is not deformed, and the fin assembly and stabilizer tube to see that they are not bent or out of line.

Caution: **Do not use a rifle grenade with a crushed protector cap or a bent stabilizer assembly.**

e. To Fire. Proceed as follows:
(1) Open bolt and clear rifle.
(2) Move rifle safety to SAFE position.
(3) Chamber grenade cartridge M3 in caliber .30 rifle, or M64 in the 7.62-mm rifle and close bolt.

Note. Caliber .30 carbine grenade cartridge M6 and auxiliary grenade cartridge M7 are no longer authorized for use by Army personnel.

(4) Place grenade stabilizer tube on launcher and push it fully "home." Grenade should slip on launcher snugly, but without binding.
(5) Move rifle safely to FIRE position.
(6) Aline the weapon on the target and fire.

Warning: **Fire rifle grenade M31 only from grenade launcher M7A3.**

f. Disarming. If the rifle grenade is not fired, proceed as outlined in paragraph 3–12*e*.

g. Capabilities. Rifle grenade M31 may be used as a low-angle, direct-firing weapon (antitank) or as a high-angle firing weapon (antipersonnel). Because of its penetrating capabilities, it is used primarily as a low-angle, direct-firing weapon. Rifle grenade M31 is capable of penetrating in excess of 10 inches of armor plate or 20 inches of reinforced concrete. Maximum range is approximately 185 meters at 45° angle of elevation. Other range data are contained in FM 23–30.

Section III. SMOKE RIFLE GRENADES

3–5. General

a. Use. Smoke rifle grenades are designed primarily for producing smoke: either for signaling or screening purposes. One type of smoke grenade, the white phosphorous (WP) grenade (para. 3–6), also has incendiary capabilities and may be used to ignite flammable targets or inflict injury on personnel. In all, there are three basic types of smoke rifle grenades: the WP smoke grenade, the colored smoke grenade, and the colored smoke streamer grenade. The WP smoke grenade functions on impact, bursting the body and scattering particles of burning white phosphorous over a large area. The colored smoke grenade functions on impact, emitting a cloud of colored smoke for approximately one minute. The colored smoke streamer grenade functions on firing, emitting a stream of colored smoke over its entire trajectory.

b. Precautions in Use. Refer to paragraph 3–1*b* for precautions to be observed when handling and firing smoke rifle grenades. Additional precautions may be found in paragraph 1–6, and in TM 9–1300–206 and FM 23–30.

3–6. Grenade, Rifle: Smoke, WP, M19A1

a. General. White phosphorous (WP) smoke rifle grenade M19A1 (fig. 3–3) is designed for projection from a rifle fitted with a grenade launcher using a grenade cartridge. The body of the smoke grenade is filled with white phosphorous; this chemical agent

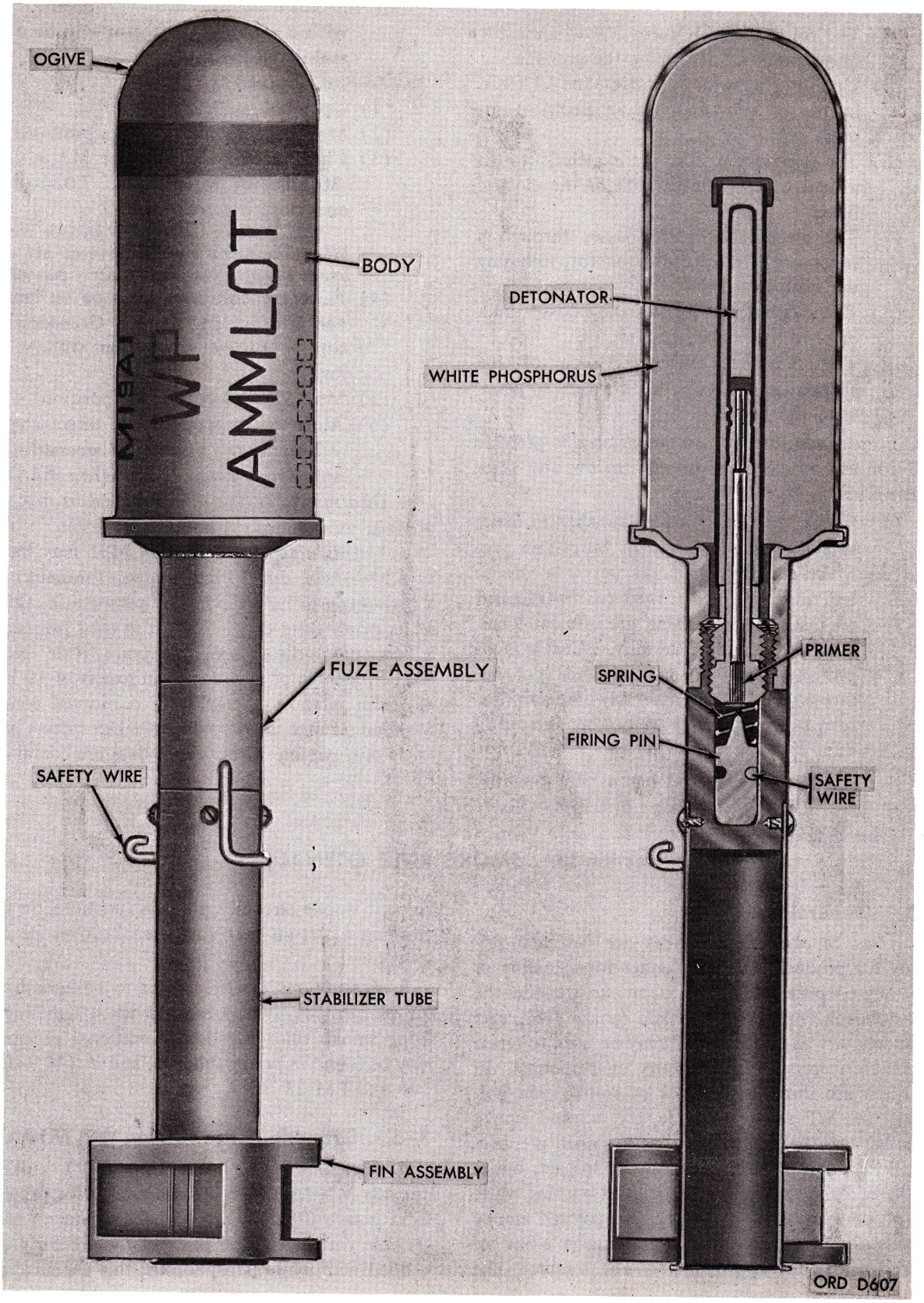

Figure 3–3. Grenade, rifle: smoke, WP, M19A1.

ignites spontaneously when exposed to air producing a yellow-white flame and giving off a dense cloud of white smoke.

b. Description.

(1) *General.* WP smoke rifle grenade M19A1 consists of three basic parts: a stabilizer tube assembly, a fuze, and a body. The stabilizer tube assembly is made of steel and functions to stabilize the grenade during its flight. The fuze is a mechanical impact detonating type. The body, made of sheet steel and filled with white phosphorous, is completely sealed to prevent entrance of air.

Warning: **Never puncture or disassemble a white phosphorous grenade, since spontaneous ignition and detonation of the detonator will thus occur.**

(2) *Data.*

Model number	M19A1
Type	White phosphorous smoke rifle grenade
Color of smoke	White
Weight	1.5 pounds
Charge	8.5 ounces of white phosphorus
Dimensions:	
Length	11.31 inches
Body diameter	2 inches
Body	Steel
Fuze	Mechanical impact detonating
Color	See table 1–1

c. Functioning. After being fired from a rifle equipped with a grenade launcher, white phosphorous smoke grenade M19A1 functions as follows:

(1) Grenade ogive strikes ground or other resistant object.
(2) Inertia of the firing pin overcomes spring tension and firing pin strikes primer.
(3) Primer emits small intense spit of flame.
(4) Flame from primer explodes detonator.
(5) Explosion of detonator ruptures body, scattering fragments of the body and particles of white phosphorous over an area of approximately 20 meters.
(6) Particles of white phosphorous ignite upon coming into contact with air and produce a dense cloud of white smoke.

d. Preparation for Use. In preparing WP smoke grenade M19A1 for use, observe precautions listed in paragraphs 1–6 and 3–1*b* and proceed as outlined in paragraph 3–4*d*.

e. To fire. Follow the procedure outlined in paragraph 3–4*e*.

Note. This rifle grenade has a safety wire which is removed just prior to firing.

f. Disarming. If the rifle grenade is not fired, proceed as outlined in paragraph 3–12*e*.

g. Capabilities. WP smoke rifle grenade M19A1 may be used for signaling and screening. When used as an antipersonnel weapon, it has an effective casualty radius of 10 meters.

Warning: **White phosphorous will cause severe burns on contact with skin or clothing. Treat burns caused by white phosphorous in the same way as ordinary burns (FM 21–40). If particles of white phosphorous are imbedded in the flesh, thoroughly wet the wound with water or pack with wet cloth to halt combustion and pick or squeeze out the particles of white phosphorous. The particles will reignite spontaneously if allowed to dry. Apply copper sulphate solution to halt combustion of white phosphorous particles being removed.**

Grenade M19A1 which, may also be used for incendiary effect against flammable targets, has a maximum range of approximately 195 meters. Other range data are contained in FM 23–30.

3–7. Grenade, Rifle: Green, Red, or Yellow, Smoke, M22–Series

a. General. Colored smoke rifle grenades M22-series (fig. 3–4) are designed to be projected from a rifle fitted with a grenade launcher, using a grenade cartridge. Smoke grenades M22-series are similar in appearance to smoke grenades M19A1 (para. 3–6) but are somewhat smaller. These colored smoke grenades, used for signaling and for laying smoke screens, produce green, red, and yellow smoke. Two models of colored smoke grenades M22-series are available: the M22 and the M22A2. Identical in functioning and use, these models differ only in minor features of construction.

b. Description.

(1) *General.* Colored smoke rifle grenade M22-series consist of three basic parts: a stabilizer assembly, a fuze, and a body. The stabilizer assembly is made of steel and functions to stabilize the grenade during flight. The fuze is a mechanical impact igniting type fuze which ignites the colored smoke charge upon impact. The body is

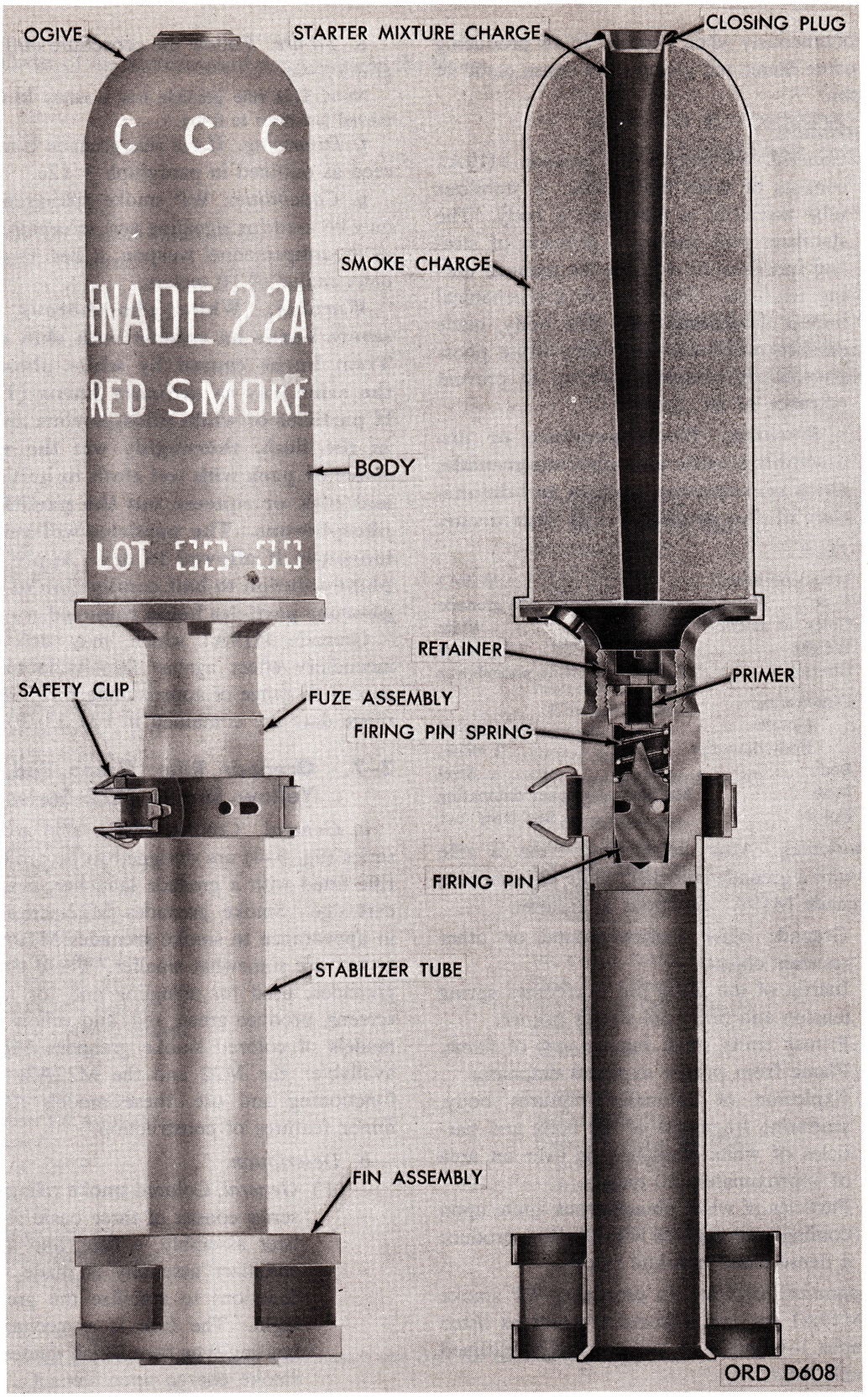

Figure 3–4. Grenade, rifle: colored smoke, M22A2.

made of sheet steel and is filled with a burning type smoke charge which contains a dye to color the smoke. The surfaces of the smoke charge within the body are coated with a starter mixture charge to facilitate ignition (fig. 3–4). A small opening or air hole in the nose of the ogive is covered by a nose closing plug, which is *not* removed when the grenade is fired.

(2) *Data.*

Model number	M22 or M22A2
Type	Colored smoke rifle grenade
Color of smoke	Green, red, and yellow
Charge	0.4 pounds of smoke charge consisting of a mixture of baking soda, potassium perchlorate, sugar, and a dye to color the smoke
Weight	1.26 pounds
Dimensions:	
Length	10.72 inches
Diameter	1.8 inches
Body	Steel
Fuze	Mechanical impact igniter
Color	See table 1–1

c. Functioning. After being fired from a rifle equipped with a grenade launcher, rifle grenades M22-series function as outlined in (1) through (6) below:

(1) Grenade ogive strikes ground or other resistant object.
(2) Inertia of the firing pin overcomes spring tension and firing pin strikes primer.
(3) Primer emits small intense spit of flame.
(4) Flame from primer ignites starter mixture charge.
(5) Burning starter mixture charge ignites smoke charge.
(6) Smoke charge burns for approximately 1 minute, emitting a dense cloud of colored smoke through holes in the base of the body.

d. Preparation For Use. In preparing smoke grenades M22-series for use, observe the precautions listed in paragraphs 1–6 and 3–1*b* and proceed as outlined in paragraph 3–4*d*.

e. To Fire. Follow the procedures outlined in paragraph 3–4*c*.

Note. This rifle grenade has a safety clip which is removed just prior to firing.

f. Disarming. If the rifle grenade is not fired, preceed as outlined in paragraph 3-12*e*.

g. Capabilities. Smoke grenades M22-series are used only for signaling and laying down smoke screens, not as casualty producing. Grenades M22-series have a range of over 200 meters.

3–8. Grenade, Rifle: Smoke, Green, Red, or Yellow, Streamer, M23–Series

a. General. Colored smoke streamer rifle grenades M23-series (fig. 3–5) are designed to be projected from a rifle fitted with a grenade launcher, using a grenade cartridge. Smoke grenades M23-series are fabricated from the same metal parts (except for the fuze) as smoke grenades M22-series (para. 3–7). Grenades M23-series are shorter than grenades M22-series because of differences in length of fuzes used. These colored smoke streamer grenades, used only for signaling purposes, produce three different colors of smoke streamers: green, red, and yellow. Two models of grenades M23-series are available; the M23 and M23A1. These two models are identical in functioning and use, and differ only in minor features of construction.

b. Description.

(1) *General.* Colored smoke streamer rifle grenades M23-series consist of three basic parts: a stabilizer tube assembly, a fuze, and a body. The stabilizer tube assembly is made from sheet steel and functions to stabilize the grenade during flight. The fuze is an igniting fuze which ignites the colored smoke charge upon firing the grenade cartridge in the rifle. The body is made of sheet steel and is filled with a burning-type smoke charge which contains a dye to color the smoke. The surfaces of the smoke charge within the body are coated with a starter mixture charge to facilitate ignition (fig. 3–5). A small opening or air hole in the nose of the ogive is covered by a piece of tape, which must be removed before the grenade is fired.

(2) *Data.*

Model number	M23 or M23A1
Type	Colored smoke streamer rifle grenade
Color of smoke	Green, red or yellow
Charge	0.4 pounds of smoke charge consisting of a mixture of baking soda, potassium, perchlorate, sugar, and a dye to color the smoke
Weight	1.16 pounds

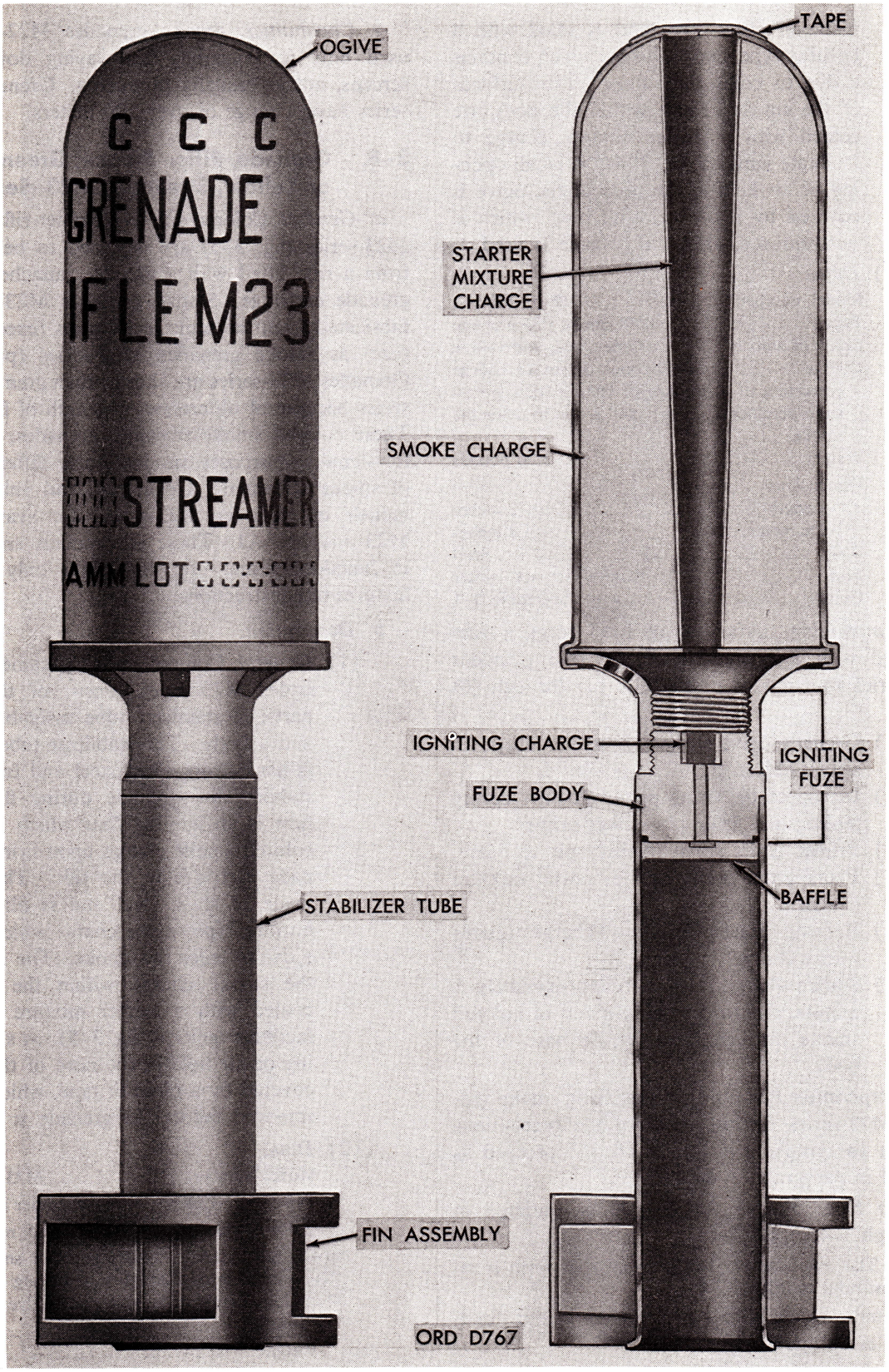

Figure 3–5. Grenade, rifle: colored smoke, streamer, M23A1.

Dimensions:
Length ..... 9.89 inches
Diameter ..... 1.8 inches
Body ..... Steel
Fuze ..... Igniting
Color ..... See table 1–1

c. Functioning. Firing the grenade cartridge in the rifle launches the grenade and ignites the fuze which, in turn, ignites the smoke charge. As the grenade travels along its trajectory, air entering the nose forces the smoke out of the holes in the base of the body, producing a streamer of colored smoke along the entire trajectory of the grenade. Upon firing the grenade cartridge in the rifle, grenades M23-series function as outlined in (1) through (6) below:

(1) Flash from the grenade cartridge passes from the rifle through orifices in the fuze to ignite the igniting charge in the fuze.
(2) Igniting charge ignites starter mixture charge.
(3) Starter mixture charge ignites smoke charge.
(4) Smoke charge begins to burn, generating colored smoke.
(5) Air entering air hole in nose of grenade forces smoke out holes in base of body, producing streamers of smoke.
(6) Smoke charge continues to burn, producing smoke over the entire trajectory of the grenade, and for a few seconds after striking the ground (total burning time: approximately 12 seconds).

d. Preparation For Use. In preparing grenades M23-series for use, observe precautions listed in paragraphs 1–6 and 3–1*b* and proceed as outlined in paragraph 3–4*d*.

Note. Remove tape from vent in nose of grenade just before firing.

e. To Fire. Follow the procedures outlined in paragraph 3–4*e*.

f. Disarming. If the rifle grenade is not fired, proceed as outlined in paragraph 3–12*e*.

g. Capabilities. Smoke streamer grenades M23-series are used only for signaling, not as casualty producing. Grenades M23-series have a range of over 200 meters.

Section IV. PRACTICE RIFLE GRENADE

3–9. General

a. Use. Practice rifle grenades are designed for training personnel in care, handling, and use of rifle grenades prior to training with live or service grenades. One type of practice rifle grenade is issued ready for use (para. 3–10). Other types are assembled from practice and training hand grenades (paras. 2–20, 2–21, and 2–22) and grenade projection adapters M1-series. Information (assembly, use, and precautions in use) on these field assembled rifle grenades with grenade projection adapters may be found in paragraphs 3–11 and 3–12.

b. Precautions. The same precautions listed for service grenades will be followed in handling and firing practice rifle grenades.

3–10. Grenade, Rifle: AT, Practice, M29 (T42)

a. General. Practice antitank rifle grenade is completely inert (no filler or fuze) and is designed to simulate the high explosive antitank grenades. This grenade is used for training in the handling and use of rifle grenades. Practice rifle grenade M29 (fig. 3–6) may be fired at a target without danger to the target other than from impact. Grenade M29 may be used repeatedly if the stabilizer tube fin assembly is replaced when it becomes damaged. The same procedure and precautions used for HEAT rifle grenade M31 should be followed when using practice rifle grenade M29.

b. Description.

(1) *General.* Practice rifle grenade M29 consists of two parts: a body of cast iron and a stabilizer tube-fin assembly of steel. A separately issued stabilizer tube-fin assembly is available for replacement purposes.

(2) *Data.*

Model number M29
Type ..... Practice antitank rifle grenade
Weight of grenade ..... 1.5 pounds
Filler ..... None
Fuze ..... None

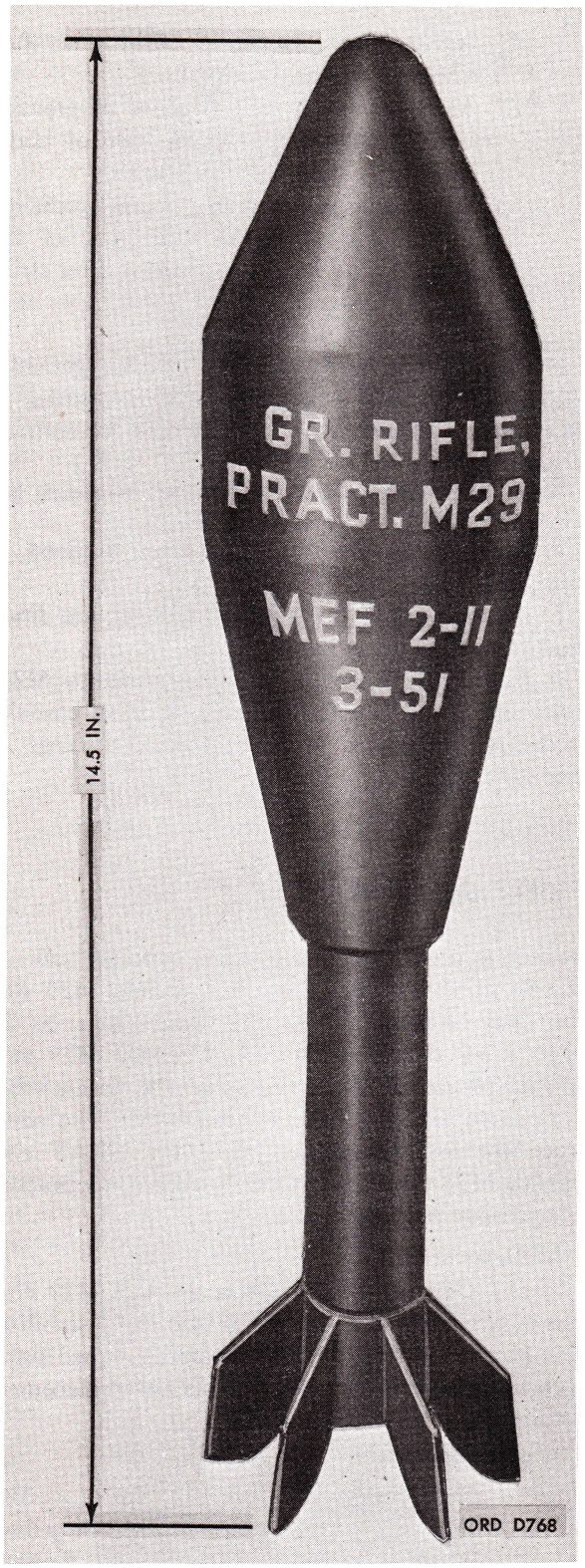

Figure 3–6. Grenade, rifle: antitank practice, M29 (T42).

Dimensions:	
Length	14.5 inches
Body diameter	3.0 inches
Body	Cast iron
Color	See table 1–1

c. Capabilities. Practice rifle grenade M29 has a maximum range of approximately 150 meters.

Section V. GRENADE PROJECTION ADAPTERS

3–11. General

a. Description. Grenade projection adapters are devices designed to adapt hand grenades for launching from rifles fitted with grenade launchers. With a grenade projection adapter, a hand grenade can be converted into a rifle grenade, thus extending its range. Grenade projection adapters consist of a stabilizer tube with a fin assembly on one end and gripping claws on the other end. The claws, of spring steel, grip the hand grenade and hold it in place on the adapter. Grenade projection adapters may be used with high-explosive and chemical hand grenades. One type of projection adapter is designed for use with lemon-shaped grenades, such as fragmentation and illuminating hand grenades. Another type is designed for use with cylindrical grenades, such as chemical irritant agent grenades. Grenade projection adapters fitted with hand grenades may be fired high angle or direct fire, depending on the effect desired. For example, a grenade projection adapter fitted with a fragmentation hand grenade may be fired high angle for an above-ground burst (15 meters maximum) to produce a free scattering of fragments. It may be projected to produce a more effective fragment dispersion against a concentration of personnel.

b. Precautions. In addition to the precautions listed in paragraph 1–6 and the precautions listed for the particular grenade used with the grenade projection adapter, the following precautions will be observed in firing grenade projection adapters fitted with hand grenades:

(1) Never remove the safety pin from the hand grenade until just before firing.
(2) Because smoke rifle grenades contain sensitive elements and easily triggered firing devices, they must never be disassembled or tampered with by unauthorized personnel.
(3) Keep adapters clean and dry, particularly the inside of the stabilizer tube. Do not use adapters with cracked and distorted

assemblies. Test each grenade to see that it fits snugly but moves freely on the launcher.

(4) Fire grenades only with grenade cartridges M3 for caliber .30 rifle or M64 for 7.62-mm rifle (para. 3–15). Do not fire with service ammunition or blank ammunition, under any circumstances.

(5) Never fire or attempt to fire rifle-projected grenades from the carbine.

(6) See that there are no burrs on the rings of the grenade launcher and that the rings are free from grit. Make certain that the grenade launcher is securely attached to the rifle.

(7) Do not apply any force to the arming clip or setback band M1-series or M2-series, respectively, of the adapter after the grenade has been attached.

(8) Never place a grenade on the launcher unless it is to be fired immediately. Do not attach grenades to the launcher as a means of carrying grenades.

(9) Normally, grenades are prevented from falling off the launcher by the grenade retainer spring; however, when firing at a minus (depressed) angle of elevation, lower rifle gently to prevent weight of the grenade from causing it to slip from the launcher.

(10) Do not handle duds. Report their location to authorized disposal personnel.

3–12. Grenade Projection Adapter, M1–Series

a. General. Grenade projection adapters, M1-series, are designed for adapting fragmentation, practice, illuminating, and WP smoke hand grenades for projection from a rifle equipped with a grenade launcher. Three different models of the projection adapter M1-series are available: the M1, the M1A1, and the M1A2 (fig. 3–7). The M1A1 and the M1A2, identical in function and use, differ only in construction of the fin assembly. The adapter M1 is similar to the M1A1 except that it has four claws instead of three and does not have a cup at the base of the claws. The adapter can only be used with fragmentation hand grenade Mk2 and practice hand grenade M21.

Note. Adapter M1 is not to be used with fragmentation hand grenades M26-series, practice hand grenade M30, or with WP hand grenade M34.

b. Description.

(1) *General.* Adapters M1A1 and M1A2 consist of four parts: a fin assembly, a stabilizer tube, a cup, and three claws. The adapter is fabricated from sheet steel with three spring-steel claws adjusted to grip the grenade body. The fin assembly is attached to one end of the stabilizer tube to stabilize the grenade during flight. The cup and claws, attached to the other end of the stabilizer tube, serve to hold the grenade in place during projection. An arming clip is attached to the longest of the three claws.

(2) *Data.*

Model number	M1, M1A1, and M1A2
Type	Fragmentation, practice, illuminating, and WP smoke (M34) hand grenade projection adapter
Length	7 inches
Metal parts	Steel
Color	Olive drab with black marking

c. Functioning. When the hand grenade with adapter placed on the grenade launcher is fired, it functions as follows:

(1) The arming clip moves rearward, striking a small extension of the arming clip retainer.

(2) Force of the arming clip's striking the small extension (made of brittle metal) breaks it, allowing the arming clip to fall free, thus releasing the safety lever.

(3) The fuze begins to function (see para. describing particular hand grenade for information on subsequent functioning.

d. Preparation For Use. In preparing the grenade projection adapter M1-series for use, observe precautions in paragraph 3–11*b* and proceed as follows:

(1) Inspect the grenade to make sure the safety pin is securely in place and the safety lever is not damaged or bent

Warning: **If the safety lever is bent or damaged, the grenade must not be used with a grenade projection adapter.**

(2) Inspect the grenade projection adapter for bent, cracked, or damaged stabilizer tube or fin assembly.

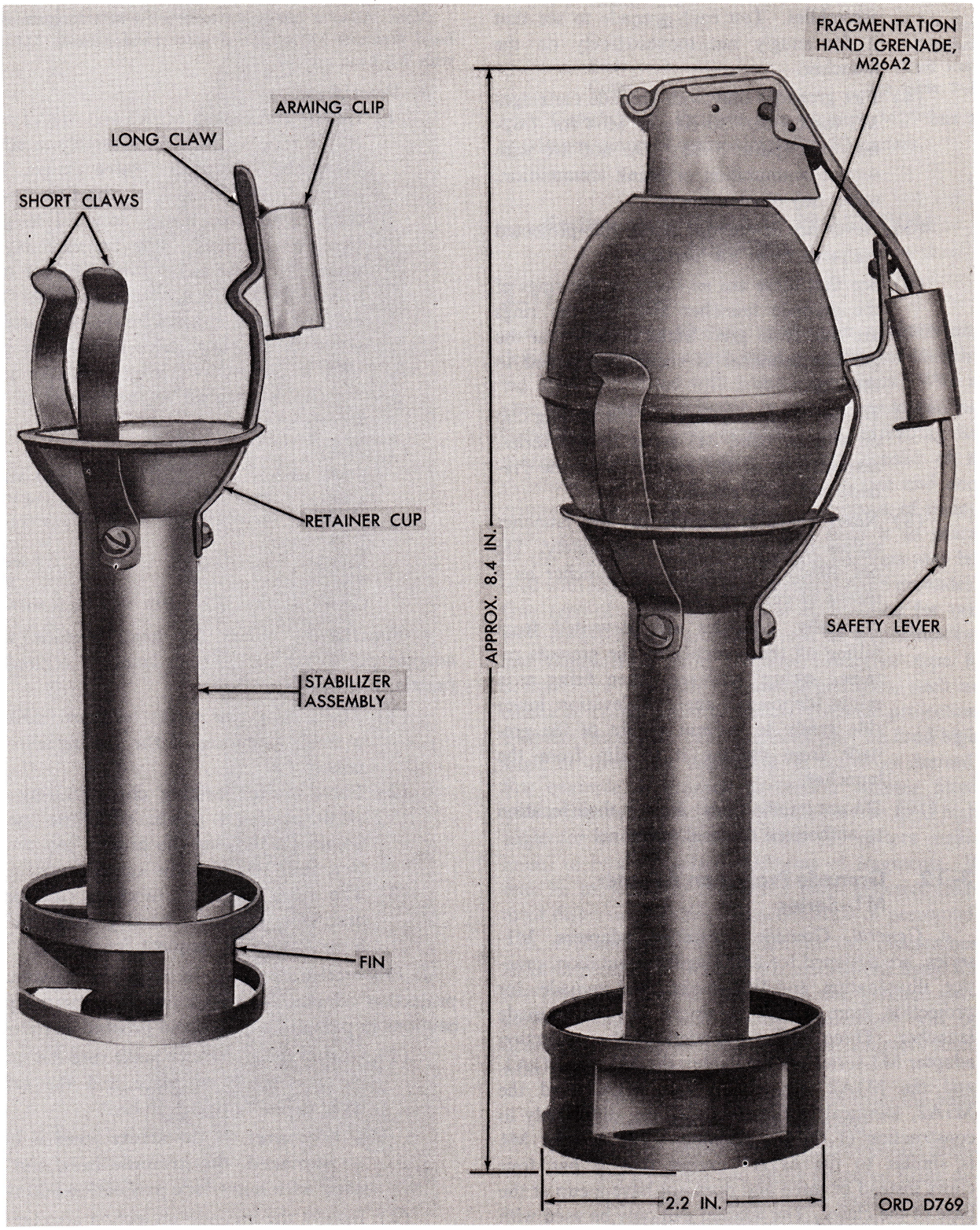

Figure 3–7. Adapter, grenade projection, M1A2 with fragmentation hand grenade.

Caution: **Do not use adapters which are bent or out of line.**

(3) Insert safety lever of grenade into arming clip of adapter.

(4) Make sure the safety pin is securely in place in the grenade. Then, force the grenade into the claws until the base of the grenade is resting in the cup (or against the end of the stabilizer tube, in the case of the adapter M1).

Warning 1: **Be sure the base of the grenade is fully seated against the base of the cup and that each of the claws holds the grenade tightly above the seam of grenade M26 or M30, or in the body serrations of grenades Mk2, M21, or M34.**

Warning 2: **Do not apply force to the arming clip of the adapter after the grenade has been attached.**

(5) Inspect the safety lever to see that its end is securely hooked under the T-lug of the fuze body.

(6) Check the rifle grenade launcher to make sure the rings are free of burrs and grit.

(7) Make sure the launcher is secure to the rifle. See FM 23–30 for instructions on installing and using grenade launcher.

(8) Open bolt and clear rifle.

(9) Move rifle safety to the SAFE position.

(10) Load grenade cartridge M3 into chamber of caliber .30 rifle M1, or M64 into chamber of 7.62-mm rifle and close bolt.

(11) Place hand grenade with grenade projection adapter on launcher and push it fully home. Stabilizer tube should slip on launcher snugly, but without binding.

Warning: **Do not remove safety pin until ready to fire.**

(12) Move rifle safety to FIRE position.

(13) Holding the safety lever in the arming clip with the thumb of one hand and being careful not to put any strain on the arming clip, carefully remove the safety pin with the other hand.

(14) Slowly ease pressure on the safety lever; see that it is held in place by the arming clip and that it does not become displaced so as to permit the fuze striker to be released.

Warning: **If the arming clip fails to hold the safety lever securely in place and/or the striker has been released, fire the grenade immediately into a safe area and take cover.**

(15) Aline the weapon on the target and fire.

e. Disarming. Once the safety pin has been removed, the grenade is armed and should be projected. If it becomes necessary to disarm a grenade after the safety pin has been removed, proceed as outlined in (1) through (6) below.

(1) Move rifle safety to SAFE position.

(2) Holding the safety lever securely in place with thumb, line up safety pin holes in the safety lever with safety pin holes in the fuze body.

Warning: **Be certain the end of the safety lever is securely in place under the T-lug on the fuze body. If the safety lever slips from under the T-lug, do not attempt to disarm the grenade; unlock the rifle and fire the grenade immediately into a safe area and take cover.**

(3) Insert the safety pin into the safety pin holes and spread the cotter pin to assure retention.

(4) Slowly and carefully ease pressure on the safety lever so that it remains securely in place.

(5) Remove adapter and grenade from launcher.

(6) Remove grenade from projection adapter and return both to their original packing.

Note. Previously opened containers should be used first in subsequent firing.

f. Capabilities. Fragmentation hand grenades can be projected a maximum of 160 meters when fired from a rifle using M1-series projection adapters. Other range data are contained in FM 23–30.

3–13. Grenade Projection Adapters, M2–Series

a. General. Grenade projection adapters M2-series are designed for adapting cylindrical chemical hand grenades for projection from rifles equipped with grenade launchers. These chemical hand grenades are described in section IV. Two different models of the projection adapter M2-series are available: the M2, and the M2A1 (fig. 3–8). The

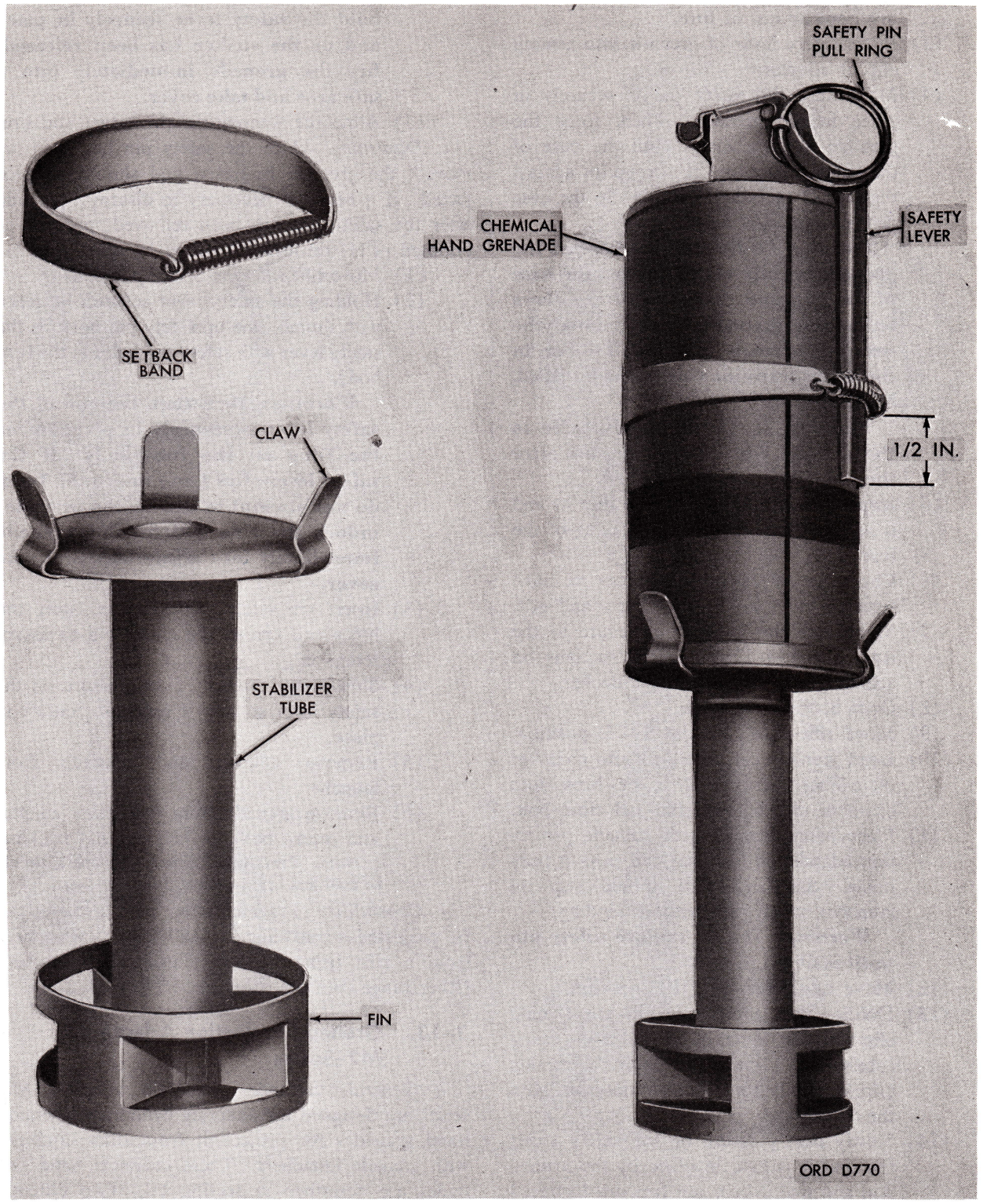

Figure 3–8. Adapter, grenade projection, M2A1 with chemical hand grenade.

M2 and the M2A1 are identical in function and use and differ only in the method of attaching the claws and claw base plate to the stabilizer tube.

b. Description.

(1) *General.* Adapters M2 and M2A1 consist of five parts: a fin assembly, a stabilizer tube, a claw base plate, three claws, and a setback band. The adapter is fabricated from sheet steel, with three spring-steel claws adjusted to grip the lip at the base of the grenade body. The fin assembly is attached to one end of the stabilizer tube to stabilize the grenade during flight. The claw base plate and claws, attached to the other end of the stabilizer tube, serve to hold the grenade in place during projection. The setback band is placed around the body of the grenade over the safety lever. This holds the lever in place after the safety pin has been removed. Upon firing, inertia moves the setback band to the rear, releasing the safety lever and thereby initiating the grenade fuze.

(2) *Data.*

Model number	M2 and M2A1
Type	Chemical hand grenade projection adapter
Length	5 inches
Metal parts	Steel
Color	Gray with black marking

c. Functioning. When the hand grenade with adapter placed on the grenade launcher is fired, it functions as follows:

(1) Setback band moves rearward, releasing safety lever.

(2) Fuze begins to function (see para. describing particular hand grenade for information on subsequent functioning).

d. Preparation For Use. In preparing the grenade projection adapter M2-series for use, observe precautions in paragraph 3–11*b* and proceed as outlined below:

(1) Assure the safety pin is securely in place and the safety lever is not damaged or bent.

***Warning:* If the safety lever is bent or damaged, the grenade must not be used with a grenade projection adapter.**

(2) Expand the spring of the setback band. Place the band around the grenade with the coil spring centered on the safety lever ½ inch from the end of the safety lever, as shown in figure 3–8.

(3) Make sure the setback band is securely in place on the grenade. Then, force the grenade into the claws until the base of the grenade is resting on the base plate.

***Warning:* Be sure the base of the grenade is fully seated against the base plate and that each of the claws holds the grenade tightly above the base seam.**

(4) Inspect the safety lever to see that its end is securely hooked under the lug of the fuze body.

(5) Make sure the launcher is secure to the rifle (see FM 23–30 for instructions in installing and using grenade launcher).

(6) Open bolt and clear rifle.

(7) Move rifle safety to the SAFE position.

(8) Load grenade cartridge M3 for cal. .30 rifle, or M64 for 7.62-mm rifle in chamber and close bolt.

(9) Place hand grenade with grenade projection adapter on launcher and push it fully home. Stabilizer tube should slip on launcher snugly, but without binding.

***Warning:* Do not remove the safety pin until ready to fire.**

(10) Move rifle safety to FIRE position.

(11) Holding the safety lever in the setback band with the thumb of one hand, carefully remove the safety pin with the other.

(12) Slowly remove the thumb pressure on the safety lever so that it is held in place by the setback band and does not become cocked in a position which would permit the fuze striker to be released.

***Warning:* If the setback band fails to hold the safety lever securely in place, fire the grenade immediately and take cover.**

(13) Aline the weapon on the target and fire.

e. Disarming. Once the safety pin has been removed, the grenade is armed and should be projected, unless there are compelling reasons not to

fire. If it becomes necessary to disarm a grenade after the safety pin has been removed, proceed as outlined in paragraph 3–12*e*.

f. Capabilities. Chemical hand grenades can be projected a maximum of 120 to 145 meters when fired from a rifle using grenade projection adapters M2-series. Other range data are contained in FM 23–30.

Section VI. RIFLE GRENADE CARTRIDGE

3–14. General

a. Uses. Rifle grenade cartridges (fig. 3–9) are specially designed cartridges used for projecting rifle grenades from rifles equipped with grenade launchers. When the grenade cartridge is fired, it generates a large volume of high-pressure gas which propels the grenade from the launcher. Rifle grenade cartridges may be identified by a 5-point, rose-petal crimp on the wad end. This crimp is a ready means of distinguishing rifle grenade cartridges from blank cartridges, which must never be used in place of rifle grenade cartridges.

b. Precautions.

(1) Only grenade cartridges prescribed in paragraph 3–15 will be used in firing rifle grenades.
(2) No bulleted cartridge will ever be used for firing rifle grenades.
(3) Never attempt to fire a grenade from a carbine. (Carbine rifle grenade cartridges and launchers are no longer authorized for use.)
(4) Never fire a rifle grenade cartridge from a rifle *not* equipped with a grenade launcher.
(5) If a grenade cartridge fails to fire, replace the cartridge with another one and attempt to fire again. If cartridge still fails to fire, inspect the rifle for broken firing pin.

3–15. Description

a. General. Grenade cartridges (fig. 3–9) are non-bulleted cartridges containing a special charge, which produces the large volume of gas needed to produce the pressure required to propel a rifle grenade. Only two grenade cartridges are authorized for use by the U.S. Army in projecting rifle grenades: the caliber .30 rifle grenade cartridge M3 used with rifle M1, and the7.62-mm rifle grenade cartridge used with rifle M14. Grenade cartridges are issued packed with rifle grenades and grenade adapters. They are also available for issue packed separately. Two other types of grenade cartridges will be found in older packings: the caliber .30 carbine grenade cartridge M6 and the auxiliary grenade cartridge M7. *These grenade cartridges are no longer authorized for use and will not be used.*

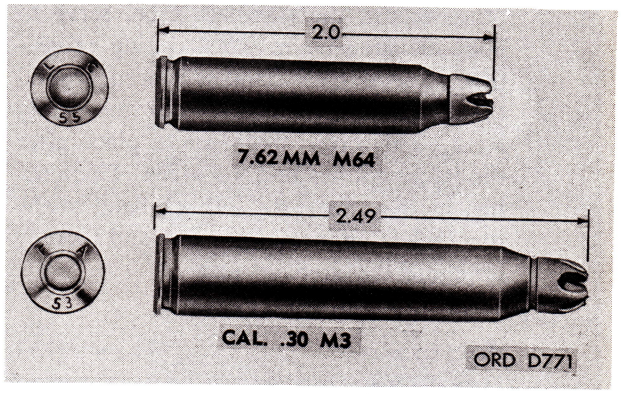

Figure 3–9. Rifle grenade cartridges.

b. Grenade, Cartridge, Rifle, Cal. 30, M3. This grenade cartridge is designed for use in projecting grenades from a rifle M1 equipped with a grenade launcher.

***Warning:* Never use any other type of ammunition in a rifle M1 when firing rifle grenades.**

Grenade cartridge M3 is loaded with 51 grains of IMR 4895 propellant. The case weighs approximately 200 grains and is 2.0 inches long.

c. Grenade, Cartridge, Rifle, 7.62-MM, M64. This grenade cartridge is designed for use in projecting grenades from a rifle equipped with a grenade launcher.

***Warning:* Never use any other type of ammunition in a rifle M14 when firing rifle grenades.**

Grenade cartridge M64 is loaded with 41 grains of A4 black powder and IMR 4895 propellant. The case weighs 185 grains and is 2.49 inches long.

CHAPTER 4

RELATED ITEMS

4–1. General

Other items used in conjunction with, or in lieu of grenades, fuzes and accessories include demolition materials, firecracker M80, hand grenade simulator M116A1, ammunition pouch, rifle grenade launchers, and rifle grenade sight M15. These items are described briefly in paragraphs 4–2 through 4–7.

4–2. Demolition Materials

a. General. The term, "demolition materials," refers to a variety of explosive charges of different sizes and shapes, explosive initiating devices designed for use with such charges, explosive and nonexplosive mechanical devices, and other nonexplosive apparatus, such as instruments, tools and equipment used

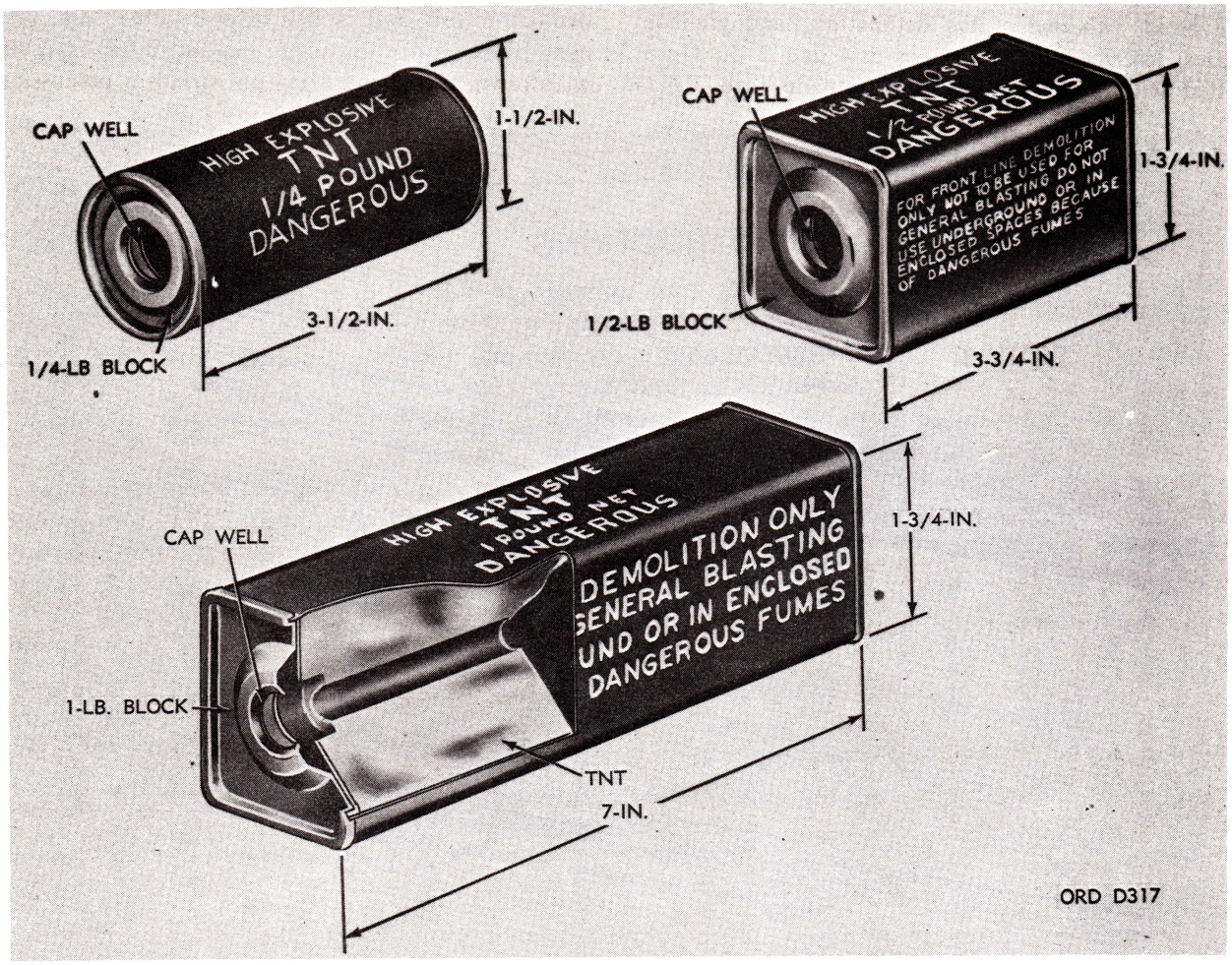

Figure 4–1. TNT demolition charges.

with charges for performing various military demolition functions. Since demolition materials include a wide variety of explosive charges and initiating devices, a number of field expedients could be assembled which would provide satisfactory substitutes for hand grenades under certain conditions. In this paragraph only those demolition materials which would most closely resemble hand grenades functionally are discussed. More detailed information on demolition materials and their use may be found in TM 9–1375–200 and FM 5–25.

b. Charge, Demolition, ¼-Pound, ½-Pound, and 1-Pound, TNT. TNT demolition charges (fig. 4–1) consist of ¼-pound, ½-pound, or 1-pound blocks of cast TNT with cap wells (fuze wells) in each end. Any one of these sizes may be used in place of a hand grenade for blast effect. To use demolition charges in place of hand grenades, the charges may be fitted with one of the detonating hand grenade fuzes described in paragraphs 2–4 and 2–5. Once fitted with a detonating hand grenade fuze, TNT demolition charges become hand grenades and must be handled as such in accordance with all appropriate instructions and precautions contained in chapter 2. A ½-pound TNT demolition charge fitted with a detonating hand grenade fuze can be thrown by the average soldier approximately 40 meters. It would have an effective casualty radius of 2 meters. However, used in an enclosed space, such as a cave or a building, its casualty radius would be substantially extended. If detonating hand grenade fuzes are not available, a delay detonator may be substituted (*c* below).

c. Delay Detonators. Delay detonators are functionally similar to detonating hand grenade fuzes except for different time delays. Delay detonators are available with either 8-second (M2 (fig. 4–2)), or 15-second (M1) delays. These differences in delay times must be taken into account when delay detonators are used in lieu of detonating hand grenade fuzes. When the safety pin and release pin are withdrawn, the spring firing pin strikes a percussion

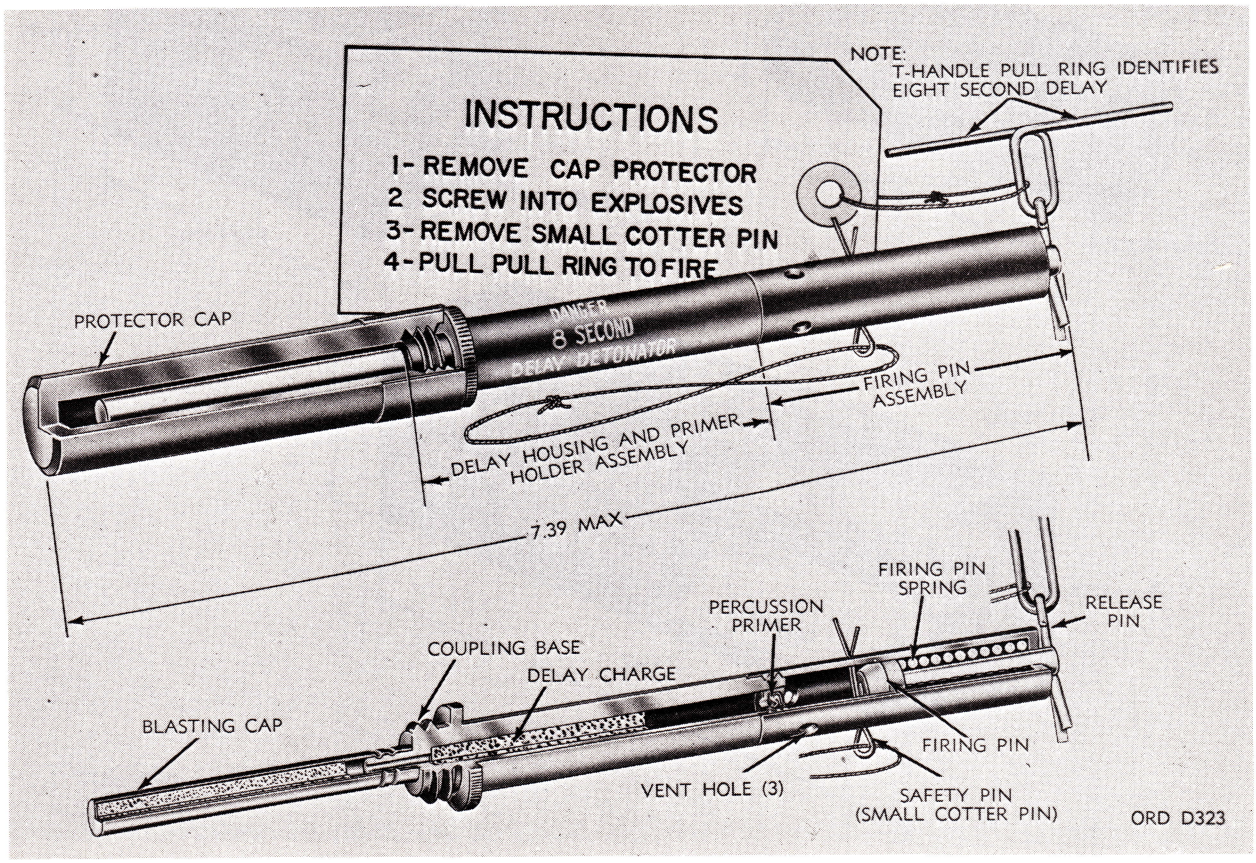

Figure 4–2. Eight-second delay detonator M2.

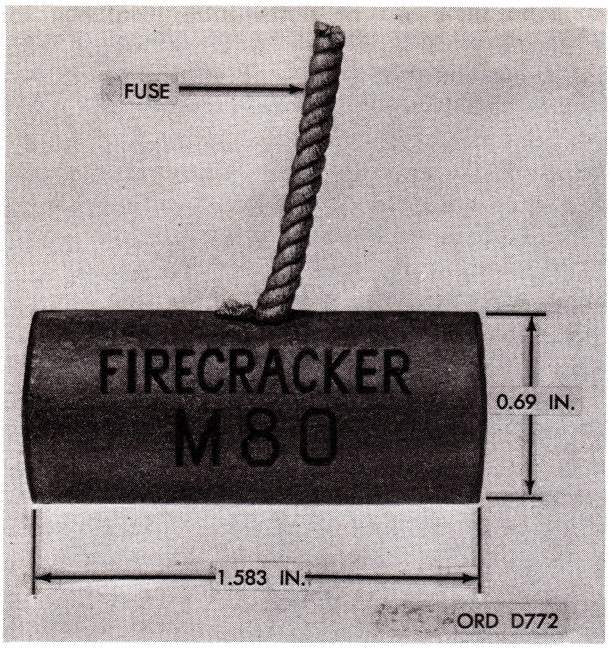

Figure 4–3. Firecracker, M80.

primer in the body of the detonator. The percussion primer emits a small intense spit of flame which ignites the delay charge. After either an 8- or 15-second delay (M2 or M1, respectively), the delay charge sets off the blasting cap (detonator) crimped to the coupling base at the end of the detonator body. Detonation of the blasting cap detonates the TNT demolition charge. See TM 9–1375–200 for detailed description and instructions on use of delay detonators.

Note. The delay detonator M2 (8-sec.) has a T-handle pullring; the delay detonator M1 (15-sec.) has a circular pullring.

4–3. Firecracker M80

Firecracker M80 (fig. 4–3) is used to simulate the sound of high-explosive hand grenades in training operations. Firecracker M80 consists of a compressed paper cylinder containing a 2-inch fuze (3- to 7-sec. delay) and a charge of 3 grams of pyrotechnic composition. The fuze may be ignited with an ordinary match or a glowing cigarette.

Warning: **Use of fuse igniters to ignite this firecracker is prohibited.**

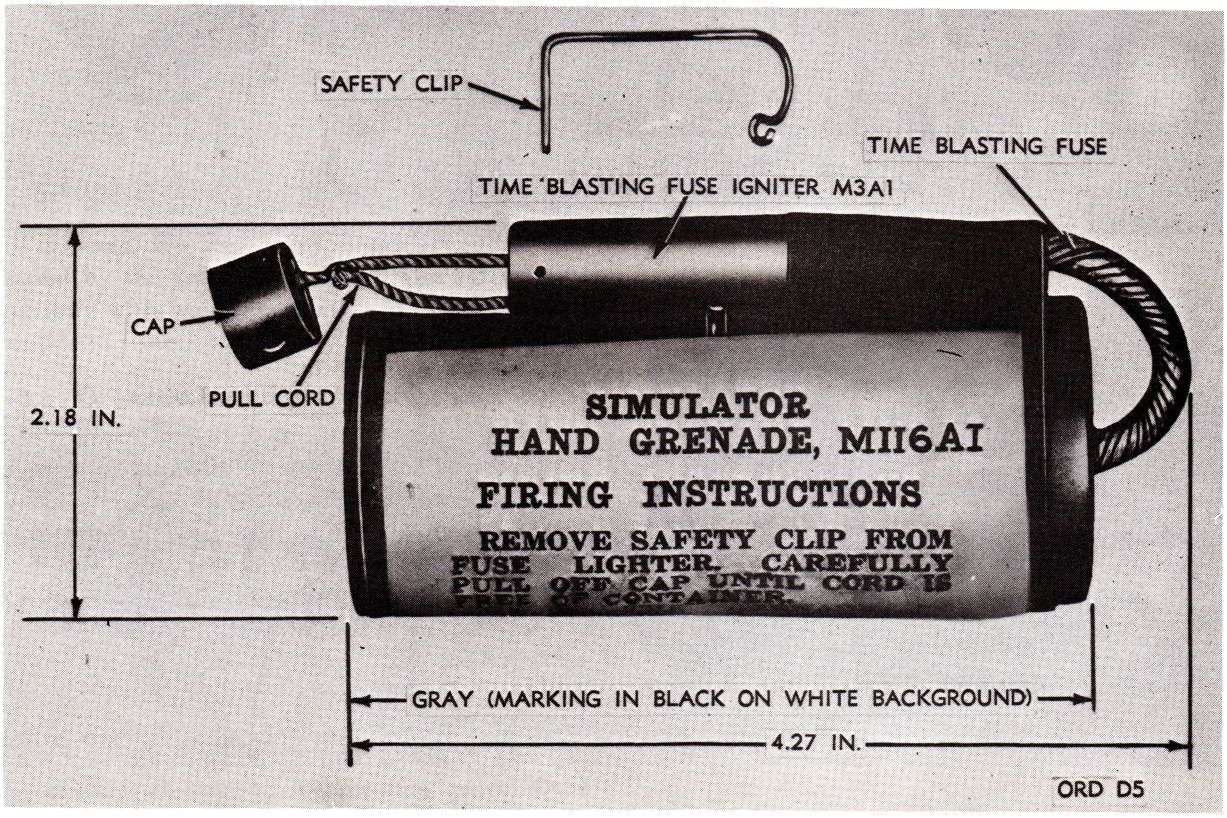

Figure 4–4. Simulator, hand grenade, M116A1.

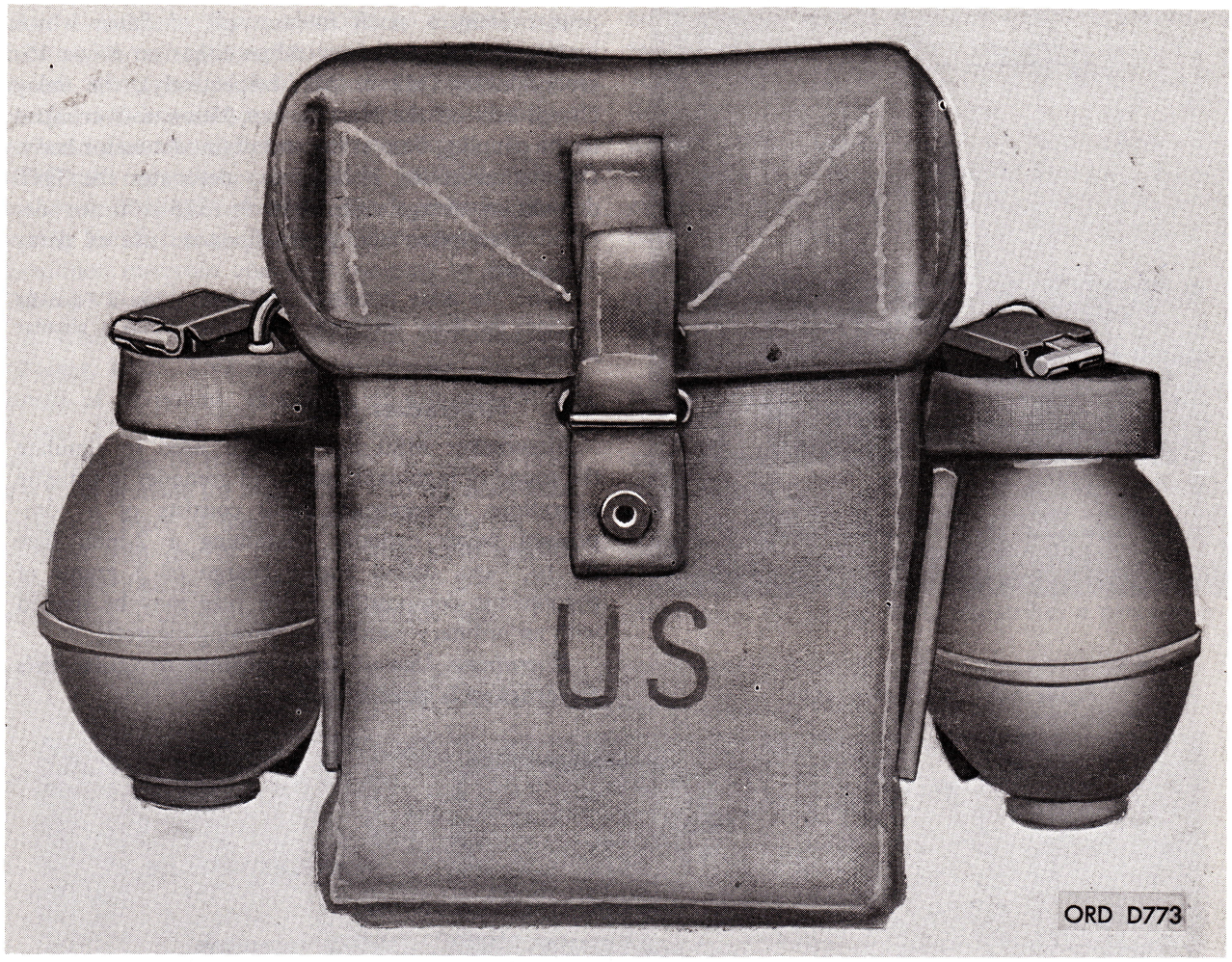

Figure 4–5. Ammunition pouch.

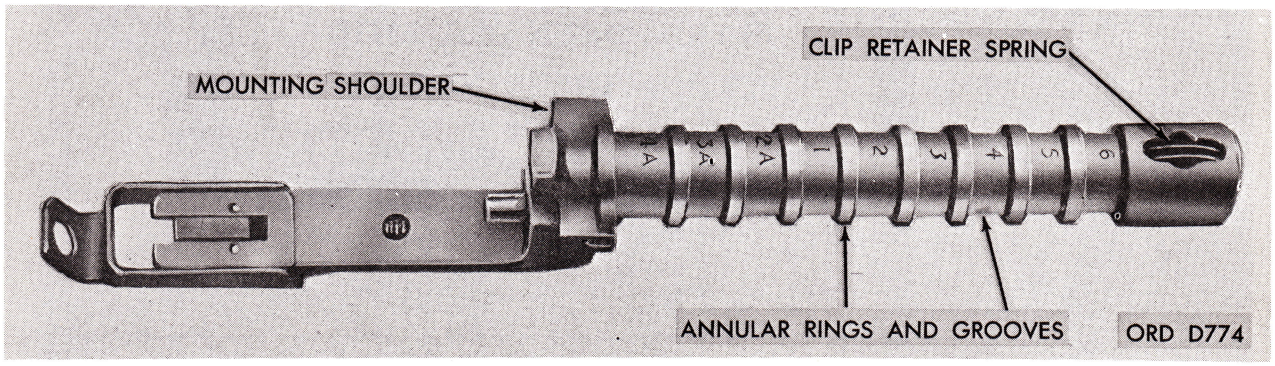

Figure 4–6. Grenade launchers, M7A3.

For additional information on this item refer to TM 9–1370–200.

4–4. Simulator, Hand Grenade, M116A1

This simulator (fig. 4–4), a pyrotechnic device, is used to provide battle noises and effects during troop maneuvers. It is ignited by action of a time blasting fuse igniter M3A1 and is thrown like a hand grenade. The time blasting fuse burns for 5 to 10 seconds after ignition followed by a flash and accompanying loud report. The body of the hand grenade simulator consists of a cylindrical paper tube, closed at each end, containing 1¼ ounces of photoflash powder. A length of time blasting fuse extends from the center of one end of the body and after a 180° bend enters into the time blasting fuse igniter M3A1. The igniter is taped to the side of the simulator. When the pull cord of the igniter is pulled, it pulls a coated wire through an ignition composition. This produces a flame which ignites the time blasting fuse. The time blasting fuse, in turn, ignites the photoflash powder charge, thus causing it to produce the flash and report. For detailed information on this simulator see TM 9–1370–200.

4–5. Ammunition Pouch

The ammunition pouch shown in figure 4–5 may be used for carrying hand grenades. This pouch can carry 5 fragmentation hand grenades. Two grenades are hung from the loop and three additional grenades are carried inside the pouch.

Warning: **Do not carry hand grenades suspended by the safety pull ring: The safety pull ring may withdraw the safety pin and cause the grenade to function.**

4–6. Grenade Launchers

A grenade launcher (fig. 4–6) functions as an extension of the barrel of a rifle which permits firing of rifle grenades. The launcher is secured to the muzzle of the rifle by means of a clip latch which fits over the bayonet stud. A bayonet can not be attached to a rifle when a grenade launcher is in place. A stud protrudes rearward just below the barrel of the launcher. When a grenade cartridge is fired, a slight recoil of the launcher causes this stud to open the valve in the gas cylinder lock screw of the rifle momentarily, permitting gas to escape. This prevents damage to the recoiling parts of the rifle. The hollow stabilizer tube of a rifle grenade slips over the barrel of the launcher and is held in place by a clip retainer spring. The latest model grenade launchers have clip retainer springs, as shown in figure 4–6. Older models have circular clip retainer springs. The circular retainer springs wear quickly and fail to hold the grenade securely to the launcher. Grenade launchers with circular clip retainer springs are *not* authorized for use with casualty-producing grenades, such as high-explosive or white phosphorous. The barrel of the launcher has numbered annular grooves. By placing a grenade in different positions on the launcher barrel while maintaining the same angle of elevation of the rifle, different ranges may be obtained when firing high-angle fire. The grenade should be fully seated on the launcher when firing direct fire. Launcher positioning clips are issued with most rifle grenades and grenade adapters. These clips fit around the grooves of the barrel of the launcher at any of the numbered positions and serve as an aid to uniform, rapid positioning of a number of grenades to be fired from, for the same position. For more detailed information on grenade launchers, see FM 23–30.

4–7. Rifle Grenade Sights

The grenade sight shown in figure 4–7 provides an angular measurement of elevation for firing rifle grenades. It can be used for both low-angle (direct firing) and high-angle firing. The sight consists of a mounting scale plate and a sight bar assembly. The mounting scale plate is attached to the left side of the stock of the rifle. The sight bar assembly

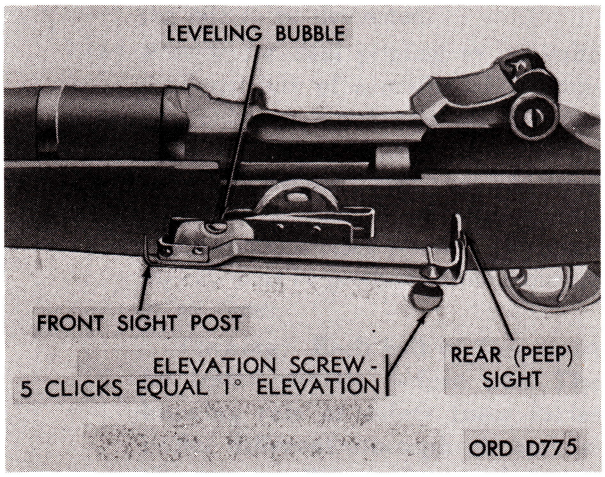

Figure 4–7. Rifle grenade sight M15.

consists of a sight bar with a front sight post, a rear peep sight mounted on a sight leaf, a leveling bubble, and an elevating screw. For information on the use of this sight, refer to FM 23–30.

CHAPTER 5

DESTRUCTION OF GRENADES TO PREVENT ENEMY USE

5–1. General

a. Destruction of grenades subject to capture or abandonment will be undertaken by the using arm only when, in the judgment of the unit commander concerned, such action is necessary in accordance with orders of, or policy established by, the Army commander.

b. The information which follows is for guidance only. The conditions under which destruction will be effected are command decisions and may vary in each case, depending upon a number of factors, such as the tactical situation, security classification, the quantity and location of grenades, facilities for accomplishing destruction, and time. In general, destruction of grenades can be accomplished most effectively by burning or detonation, or a combination of these methods. However, selection of the particular method of destruction requires imagination and resourcefulness in the utilization of the facilities at hand under the existing conditions. Time is usually critical.

c. If destruction to prevent enemy use is resorted to, grenades and their components must be so badly damaged that they cannot be restored to a useable condition in the combat zone. Equally important, the same essential components of all grenades must be destroyed so that the enemy cannot assemble complete rounds from undamaged components of several damaged complete rounds.

d. If destruction of grenades is directed, due consideration should be given to the following:

(1) Selection of a site (for the destruction operation) that will cause greatest obstruction to enemy movement and also prevent hazard to friendly troops from fragments incidental to the destruction.

(2) Observance of appropriate safety precautions.

5–2. Methods

Grenades can be most quickly destroyed by burning or detonation. The following methods, in order of preference, are considered the most satisfactory for destruction of grenades to prevent enemy use:

a. Method No. 1—by Detonation.

(1) *General.* Packed and unpacked HE grenades, fuzes, and accessories may be destroyed by placing them in piles and detonating them with demolition charges, using 1-pound TNT blocks or equivalent, together with the necessary detonating cord to make up each charge.

(2) *Method of destruction.*

Note. One hundred pounds of packed HE grenades require a 2-pound demolition charge to assure complete detonation of the pile. For unpacked HE grenades, a 1-pound demolition charge is sufficient.

(*a*) Prepare the demolition charge (using the required TNT blocks together with the necessary detonating cord per charge) and place the charges, as necessary, on the pile to be detonated.

(*b*) Provide for dual priming to minimize the possibility of a misfire. For priming, either a nonelectric blasting cap crimped to at least 5 feet of time blasting fuse or an electric blasting cap and firing wire may be used. Time blasting fuse, which contains black powder, and blasting cap must be protected from moisture at all times.

Warning: **Each roll of fuse must be tested shortly before use. The burning rate of safety fuses varies under different atmospheric and/or climatic conditions; from a burning time of 30 seconds or less per foot to 45 seconds or more per foot.**

Time blasting fuse may be ignited by a blasting fuse igniter or an ordinary match; the electric blasting cap requires a blasting machine or equivalent source of electricity.

Warning: **Blasting caps, detonating cord, and time blasting fuse must be kept separated from the charges until required for use.**

Note. For the successful execution of methods of destruction involving the use of demolition materials, all personnel concerned will be thoroughly familiar with the provision of FM 5–25. Training and careful planning are essential.

(*c*) Detonate the charges. If primed with nonelectric blasting cap and time blasting fuse, ignite and take cover; if primed with electric blasting cap, take cover before firing the charges. The danger area for piles detonated in the open is a circular area which varies according to the quantity of explosive items to be destroyed. Quantity-distance data (inhabited building distance) as given in TM 9–1300–206 may be used as an appropriate guide for such operations as are contemplated in this chapter.

b. Method No. 2—by Burning.

(1) *General.* Packed and unpacked high-explosive grenades, smoke grenades, and illuminating grenades may be destroyed quickly and effectively by burning.

(2) *Method of destruction.*

(*a*) The ammunition should be stacked up in a pile.

(*b*) Place flammable materials, such as rags, scrap wood, or brush, on and about the pile.

(*c*) Pour gasoline and oil over the entire pile.

(*d*) Ignite by means of an incendiary grenade fired from a safe distance, a combustible train of suitable length, or other appropriate means. Take cover immediately. The danger area for piles being burned in the open is 600 meters.

Warning: **Cover must be taken without delay, since an early explosion of explosive ammunition may be caused by the fire. Consideration should be given to the highly flammable nature of gasoline and its vapor. Carelessness in its use may result in painful burns.**

APPENDIX I

REFERENCES

1. Publications Indexes

The following indexes should be consulted frequently for latest changes or revision of references given in this appendix and for new publication relating to material covered in this technical manual.

Indexes of Army Motion Pictures, Film Strips, Slides, and Phono-Recordings ..... DA Pam 108–1

Military Publications:

- Index of Administrative Publications ..... DA Pam 310–1
- Index of Blank Forms ..... DA Pam 310–2
- Index of Doctrinal, Training and Organizational Publications ..... DA Pam 310–3
- Index of Graphic Training Aids and Devices ..... DA Pam 310–5
- Index of Supply Catalogs and Supply Manuals ..... DA Pam 310–6
- Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9) Supply Bulletins, Lubrication Orders, and Modification Work Orders ..... DA Pam 310–4
- Index of Ordnance Publications (Navy) ..... OPO

2. Supply Manuals

FSC Group 13 Ammunition and explosives Class 1305 ammunition, through 30mm 1310 ammunition, over 30mm up to 75mm 1315 ammunition, 75mm through 125mm 1320 ammunition, over 125mm 1325 bombs 1330 grenades ..... SC 1305/30–IL

FSC Group 13 Ammunition and explosives Class 1340 Rockets and rocket ammunition 1345 land mines 1350 underwater mine inert components 1351 underwater mine explosive components 1355 torpedo inert components 1356 torpedo explosive components 1360 depth charge inert components 1361 depth charge explosive components 1365 military chemical agents 1370 pyrotechnics 1375 explosives solid propellants, and explosive devices 1380 military biological agents 1385 explosive ordance disposal tools surface 1386 tools underwater 1390 fuzes and primers 1395 miscellaneous ammunition 1398 specialized ammunition handling and servicing equipment. ..... SC 1340/98–IL

FSC Group 13 Ammunition and explosives Class 1305 ammunition, through 30mm 1310 ammunition, over 30mm up to 75mm 1315 ammunition, 75mm through 125mm 1320 ammunition, over 125mm 1325 bombs 1330 grenades ..... SC 1305/30–ML

FSC Group 13 Ammunition and explosives Class 1340 Rockets and rocket ammunition 1345 land mines 1350 underwater mine inert components 1351 underwater mine explosive components 1355 torpedo inert components 1356 torpedo explosive components 1360 depth charge inert components 1361 depth charge explosive components 1365 military chemical agents 1370 pyrotechnics 1375 explosives solid propellants, and explosive devices 1380 military biological agents 1385 explosive ordance disposal tools surface 1386 tools underwater 1390 fuzes and primers 1395 miscellaneous ammunition 1398 specialized ammunition handling and servicing equipment ..... SC 1340/98–ML

3. Forms

*The following forms pertain to the material covered in this manual:

DA Form 2415, Ammunition Condition Report
DD Form 6, Report of Damaged or Improper Shipment

4. Other Publications

a. Ammunition, All Types.

Ammunition, General	TM 9–1900
Ammunition: Federal Stock Numbers and Department of Defense Codes	TB 9–AMM–5
Ammunition: Restricted or Suspended	TB 9–AMM–2
Care, Handling, Preservation, and Destruction of Ammunition	TM 9–1300–206
Disposal of Supplies and Equipment: Ammunition	SR 755–140–1
Distribution of Ammunition for Training	AR 710–1300–1
Responsibilities and Procedures for Explosive Ordnance Disposal	AR 75–15
Grenades and Pyrotechnics	FM 23–30
Military Pyrotechnics	TM 9–1370–200
Military Explosives	TM 9–1910
Identification of Inert Ammunition and Ammunition Components	AR 385–65
Regulations for Firing Ammunition for Training, Target Practice, and Combat	AR 385–63
Small Arms Ammunition	TM 9–1305–200
Small Arms Ammunition Lots and Grades	TB 9–AMM–4
Ammunition Rockets, and Missiles for Training	TA–23–100
Treatment of Chemical Warfare Casualties	TM 8–285

b. Camouflage.

Camouflage, Basic Principles and Field Camouflage	FM 5–20
Battlefield Illumination	FM 20–60

c. Decontamination.

Chemical, Biological, and Radiological (CBR)—Decontamination	TM 3–220
Small Unit Procedures in Nuclear, Biological, and Chemical Warfare	FM 21–40

d. Destruction to Prevent Enemy Use.

Explosives and Demolitions	FM 5–25
Care, Handling, Preservation and Destruction of Ammunition	TM 9–1300–206
Demolition Materials	TM 9–1375–200

e. General.

Army Safety Program	SR 385–10
Chemical, Biological, and Radiological Operations	FM 3–5
Chemical Corps Reference Handbook	FM 3–8
Department of Defense Ammunition Code	SB 708–100
Federal Supply Classification: Part I, Groups and Classes	SB 708–21
Ground Chemical Munitions	TM 3–300
Malfunctions Involving Ammunition and Explosives	AR 700–1300–8
Military Chemistry and Chemical Agents	TM 3–215
Safeguarding Defense Information	AR 380–5
Military Symbols	FM 21–30/AFR 55–3
Military Terms, Abbreviations, and Symbols:	
Authorized Abbreviations and Brevity Codes	AR 320–50
Dictionary of United States Army Terms	AR 320–5

* For instructions on the use of DA Forms, refer to TM 38–750.

Military Training Management	FM 21–5
Ordnance Ammunition Service	FM 9–5
Data Sheets for Ordnance Type Materiel	TM 9–500
Ordnance Direct Support Service	FM 9–3
Ordnance Service in the Field	FM 9–1
Accident Reporting and Records	AR 385–40
Techniques of Military Instruction	FM 21–6
Fire Report	AR 385–12
Supply and Service Installations and Activities:	
Organization and Command Relationship	AR 780–10
General Principles and Policies and Basic Procedures	AR 735–5
Requisitioning, Receipt, and Issue System	AR 725–50
Protection of Ordnance General Supplies in Open Storage	TB ORD 379
Demolition Equipment Set, Explosive Initiating, Electric and Nonelectric	SM 9–4–1375–RO3
Demolition Equipment Set, Explosive Initiating, Nonelectric	SM 9–4–1375–RO4
Bureau of Explosives Pamphlets No. 6 and No. 6A, Bureau of Explosives, 63 Vesey St., New York 7, N.Y.	
Consolidation Freight Classification No. 22	
Freight Classification Guide	CTB 42

f. Shipment and Limited Storage.

Logistics (General): Report of Damaged or Improper Shipment	AR 700–58
Military Traffic Management Regulation	AR 55–355
Requisitioning, Receipt, and Issue System	AR 725–50
Transportation by Water of Explosives and Hazardous Cargo	AR 55–228
Administration	AR 210–10

g. Training Aids.

Index of Doctrinal, Training, and Organizational Publications	DA Pam 310–3
Index of Graphic Training Aids and Devices	DA Pam 310–5
Targets, Target Material, and Training Course Layouts	TM 9–6920–210–14

h. Maintenance and Repair.

Ordnance General and Depot Support Service	FM 9–4
Ordnance Maintenance: Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materiel; and Related Materials Including Chemicals	TM 9–247

APPENDIX II

INDEX OF FORMER ITEM NAMES

Former item name	*Federal Item name*
ADAPTER, grenade-projection	ADAPTER, GRENADE PROJECTION
BODY, for grenade	BODY, PRACTICE HAND GRENADE
CARTRIDGE, grenade: Assortments	CARTRIDGE ASSORTMENT, GRENADE
CARTRIDGE, grenade, carbine	CARTRIDGE, GRENADE
CARTRIDGE, rifle grenade CHARGE ASSEMBLY	CHARGE, PRACTICE HAND GRENADE
FIN ASSEMBLY, for grenade	FIN ASSEMBLY, RIFLE GRENADE
FUZE, grenade, hand	FUZE, HAND GRENADE
GRENADE, hand	GRENADE, HAND
GRENADE, hand, dummy GRENADE, rifle	GRENADE, RIFLE
OGIVE ASSEMBLY, for grenade	OGIVE, RIFLE GRENADE

APPENDIX III

COMPLETE ROUND TABLE

A complete round consists of all the components necessary for the item to function as intended. Rifle grenades, as issued in present packs, may contain grenade cartridges for both rifle and carbine and auxiliary grenade cartridges. New packs of the rifle grenades will contain grenade cartridges for rifles only. Complete rounds of hand and rifle grenades and hand grenades when adapted for launching from rifles are as follows:

Hand grenades

Chemical.....Filled body and fuze issued in one assembly.

Fragmentation.....Filled body and fuze issued in one assembly.

Illuminating.....Filled body and fuze issued in one assembly.

Practice.....Body (w/charge assembly), stopper, and fuze issued in one assembly. Replacement parts to provide for reuse of the grenade body are issued separately (fuzes, charge assemblies, and stoppers). Also empty grenade bodies are issued for replacement of expended ones.

Rifle grenades

Antitank.....Filled body, fuze, and stabilizer issued in one assembly. Launching cartridges for the grenades are attached to the stabilizer.

Fragmentation or Illuminating.....Fragmentation or illuminating hand grenade, projection adapter, and launching cartridge issued separately. Hand grenade and adapter assembled in field.

Practice.....Empty body, simulated fuze, and stabilizer assembly issued in one assembly with launching cartridges.

Smoke.....Filled body, fuze, and stabilizer are issued in one assembly. Launching cartridges, and launcher positioning clips are packed in the boxes with the grenades.

INDEX

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USACDCQMA (1)
USACDCSWA (2)
ARADCOM (2)
ARADCOM Rgn (2)
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  USAREUR (5)
MDW (1)
Armies (3) except
  First US Army (5)
Corps (2)
USAC (2)
Div (2)
Instl (2)
LOGCOMD (2)
Army Dep (2) except
  LEAD (4)
GENDEP (OS) (2)
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Ord Dep (OS) (5)
PG (2) except
  Ord PG (10)
Ord Arsenals (2) except
  Edgewood (75)
  Picatinny (35)
Proc Dist (1) except
  Chicago (None)
Svc Colleges (2)
Br Svc Sch (2)
SMC Ammo & Sur Sch (30)
USAAPSA (3)
USAWECOM (2)
USAMUCOM (5)
USAMOCOM (2)
USAMICOM (5)
USASMC (5)
USAECOM (2)
Fld Comd, DASA (1)
USA Tml Comd (2)
PMS Sr Div Ord Units (1)
POE (3)
Mil Msn (1)
MAAG (2)
JBUSMC (2)
JUSMAGG (2)
Units org under fol TOE:
  3–500 KA (2)
  5–5 (2)
  5–500 (2)
  9–500, BB, KA, KB, KC, IA, FA (2)

NG: State AG (3);
Units Same as Active Army except allowance is one copy for each unit.

USAR: None:

For explanation of abbreviations used see AR 320–50.